THE

BOMBAY ENGINEERS' REPORT

FOR THE

OFFICIAL YEAR 1850-51;

COMPRISING

REPORTS FROM LIEUTENANT COLONEL W. B. GOODFELLOW,
MAJOR H. B. TURNER, CAPTAINS C. W. TREMENHEERE,
J. ESTRIDGE, P. L. HART, AND W. D. GRAHAM,
AND LIEUT. H. W. B. BELL.

Bombay:

PRINTED FOR GOVERNMENT

AT THE

BOMBAY EDUCATION SOCIETY'S PRESS.

1852.

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on 10 January, 2019

MILITARY.

ACCOUNT OF THE EXPENDITURE

IN THE

GARRISON ENGINEER AND CIVIL ARCHITECT'S DEPARTMENT,

FOR THE YEAR 1850-51.

Bombay, 1st May 1851.

Names of Works.	Amount.	Total.
	Rs. a. p.	*Rs. a. p.*
Annual Repairs.		
To the public buildings occupied by troops, &c., in the Castle, Fort George, Garrison, on the Esplanade, in Colaba, and at Out-posts	18,038 10 0	
Petty Repairs.		
To the public buildings occupied by troops, &c., in the Castle, Fort George, Garrison, on the Esplanade, in Colaba, and at Out-posts	10,555 5 4	28,593 15 4
Certain Works.		
Additions and alterations to the Government Printing-press Buildings, to adapt them to the purposes of a Depôt and Government Dispensary	3,363 4 0	
Pulling down and rebuilding the quarters of the Staff Serjeants in Fort George	490 0 0	
Constructing a depository for patterns of castings in the Gun Carriage Department	105 0 0	
Preparing specimens of wood, pickled by the sulphate of copper, to be sent to various officers for trial	12 8 0	
Carried forward, Rupees	3,97 0 12 0	28,593 15 4

Names of Works.	Amount.			Total.		
	Rs	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward, Rupees	3,970	12	0	28,593	15	4
Substituting five glass windows for venetians in the bungalow No. 104, at Colaba	52	8	0			
Renewing the sluice gate of the ditch on the south side of the new Mandavee Lunette ...	148	0	0			
Covering with cudjans the sheds on the ramps of the two wells on the Esplanade, where the bullocks draw water for the troops, &c. at Colaba	180	0	0			
Erecting a temporary bathing-shed in rear of the hospital at Fort George, for the use of the men of Her Majesty's 78th Regiment ..	29	0	0			
Filling up the ditch, &c. in rear of the barracks at Fort George	3,360	0	0			
Constructing a defaulters'-room in the verandah of the quarter guard of the 28th Regiment Native Infantry	115	0	0			
Additions and alterations to the Staff Serjeants' Quarters in Fort George	422	0	0			
Making partitions in the barracks at Fort George	619	0	0			
Experiment of watering with solution of sulphate of copper the floors in the Grand Arsenal, at present infested with white ants.	7	13	8			
Constructing a small reservoir at the Depôt of Queen's Troops at Colaba	483	0	0			
Additions and alterations to the Medical Stores in the Fort	438	0	0			
Constructing a new drain in the Marine Battalion Native Infantry Lines	364	0	0			
Erecting a cudjan shed over the well in the compound of the senior Regimental Surgeon on the Esplanade, also cleaning it out, and clearing the compound of weeds, &c.	33	15	7			
Alterations and improvements to the armoury branch of the Grand Arsenal	198	0	0			
Extending the chebootras in front of the doorways of the bungalows No. 45 and 47, at Colaba	90	8	0			
Additions to the new Medical Stores, in consequence of a portion of the building being required by the Board of Conservancy for widening Apollo Street	105	0	0			
Fixing four unserviceable guns, as pivots to 56-pounder traversing carriages, for the new bunder at Colaba	287	9	2			
Making a moveable boarded floor, adding six sky-lights, and removing the plank ceiling, in the large working-room of the Percussion Cap Manufactory at Mazagon Powder Works	1,106	0	0			
Carried forward, Rupees	12,010	2	5	28,593	15	4

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward, Rupees	12,010	2	5	28,593	15	4
Constructing stone steps, in lieu of the wooden steps, to the quarters of the Adjutant of the 2nd Battalion Artillery.	63	0	0			
Constructing wooden groins to protect Mahim Fort..	788	0	0			
Improvements in the Commissariat Stores..	900	0	0			
Substituting six glass windows for venetians to the quarters No. 102, at Colaba	50	0	0			
Constructing a new drain from the cess-pool of the Dispensary Cook-room of the Medical Stores in the Fort to the street drain..	18	0	0			
Supplying kuskus, required for tatties for the European barracks, &c. at Hydrabad, in Scinde	218	12	9			
Repairs to the building at Butchers' Island..	190	0	0			
Repairs to the quarters No. 1 on the Esplanade..	489	0	0			
Levelling the ground in front of the men's barracks in Fort George	115	3	6			
Repairs to the European General Hospital, and to the Assistant Surgeon's Quarters..	110	0	0			
Repairing the frame-work of the Bombay cast cylinder mill of the Powder Works, at Mazagon	73	0	0			
Cleaning out the Fort Ditch	485	0	0			
				15,510	2	8
Buildings.						
A new ball-casting shed in the Grand Arsenal.	979	0	0			
A new drawing-room to the Chief Engineer's Office.	3,259	0	0			
New quarters for the Serjeant Major of the Marine Battalion	936	0	0			
Repairing 300 doors and 60 windows complete, required for the barracks at Kurrachee....	6,903	11	3			
				12,077	11	3
Miscellaneous.						
Levelling the Esplanade; supplying water to the dhobees; annual repairs to the Dhobeewada, &c.; sinking a new well, or circular shaft; covering the rubbish with sand near the Colaba Causeway; repairing, filling in, and strengthening the sea face of the Esplanade; cleaning out and deepening the wells, and expenses in collecting the fees, &c.	....			11,726	4	5
Paid to artificers and labourers engaged for, or returning from, Out-stations, &c.	....			4,945	4	5
Total, Rupees Seventy-two thousand Eight hundred and Fifty-three, Annas Six, and Pie One...				72,853	6	1

Statement of the Sums expended by the Garrison Engineer and Civil Architect at the Presidency, from 1st May 1850 to 30th April 1851.

Names of Officers.	Annual and Petty Repairs.	Certain Works.	Buildings.	Expended from Esplanade Fund.	Expended for Artificers and Labourers engaged for, or returning from, Out-stations.	Total.
	Rs. a. p.	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*
Captain J. H. G. Crawford, Garrison Engineer and Civil Architect, and Captain J. Estridge, Acting Garrison Engineer and Civil Architect at the Presidency.....	28,593 15 4	15,510 2 8	12,077 11 3	11,726 4 5	4,945 4 5	72,853 6 1

Statement showing the Cost of Engineering and General Superintendence of the Garrison Engineer and Civil Architect's Department, for the above period.

Names of Officers.	Expense of Establishment per annum.	Expenditure.	Rate per cent.
	Rs. a. p.	*Rs. a. p.*	
Captain J. H. G. Crawford, Garrison Engineer and Civil Architect, and Captain J. Estridge, Acting Garrison Engineer and Civil Architect at the Presidency	14,623 12 0	72,853 6 1	$20\frac{1}{16}$

(Signed) J. ESTRIDGE, Captain,
Acting Garrison Engineer and Civil Architect at the Presidency.

CIVIL.

ACCOUNT OF THE EXPENDITURE

IN THE

GARRISON ENGINEER AND CIVIL ARCHITECT'S DEPARTMENT,

FOR THE YEAR 1850-51.

Bombay, 1st May 1851.

Names of Works.	Amount.	Total.
GENERAL DEPARTMENT.	*Rs. a. p.*	*Rs. a. p.*
Annual and Petty Repairs.		
Annual repairs to the buildings in the General Department, for 1850-51	4,296 13 2	
Petty repairs to the buildings in the General Department	4,931 14 5	
		9,228 11 7
Certain Works.		
Alterations and repairs to the road to the Powder Works through the village of Mattarpacady, at Mazagon..	1,048 0 0	
Constructing two additional fireplaces in the Parsee cook-room, and putting up a copper boiler in the Mahratta cook-room of the Jamsetjee Jejeebhoy Hospital..	255 0 0	
Putting up lamps and a moveable chain on the Town Custom House Bunder	5,853 0 0	
Constructing a wooden railing across the centre of the receiving-hall of the Jamsetjee Jejeebhoy Hospital	56 0 0	
Opening two doors, and removing a portion of the wall, in the Revenue Secretary's Office..	76 4 0	
Alterations and additions to the Government House at Parell	610 11 11	
Carried forward, Rupees	7,898 15 11	9,228 11 7

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward, Rupees	7,898	15	11	9,228	11	7
Placing cudjans in front of the doors and windows of the new quarters for the apprentices and hospital assistants of the Jamsetjee Jejeebhoy Hospital	45	0	0			
Removing four mussal's steps and six mussal's trays, also the rafter railing of a well, and repairing wooden water wheels and interior wall of a well near the Troopers' stable at the Government House at Parell..	152	0	0			
Placing the buildings at Malabar Point in proper condition for the reception of His Excellency the Commander in Chief, as also the stabling and other out-offices	774	0	0			
Certain alterations in the office of the Revenue and Financial Secretary to Government.	1,082	5	10			
Putting the Government House and buildings at Parell in a proper state of repair.. ..	2,719	0	0			
Additional teakwood shelves in the Government Record-room in the Town Hall. ..	1,322	8	0			
Alterations required to adapt the present quarters of the Medical Officer in Charge of the Lunatic Asylum at Colaba for the reception of Lunatics....	5,205	0	0			
Alterations necessary to the wing of the Secretariat occupied by the General Department, both for improved ventilation and convenience....	656	0	0			
Constructing reservoirs on the Esplanade....	2,045	5	0			
Putting up a wooden bathing place complete, with leaden sheet and pipe, in the Government House at Parell....	116	5	2			
Making an opening through the roof of the cook-room at the Parell Flag-staff, for the smoke to pass out	13	10	0			
Certain alterations and repairs to the Jamsetjee Jejeebhoy Dhurumshalla	487	0	0			
Re-opening five wells, and sinking seven temporary shafts, on the Esplanade, and surrounding them by rafter fences	695	0	0			
Deepening the Phansee Tank on the Esplanade..	2,000	0	0			
Placing wire screens over the windows facing the street of the general record-room attached to the Secretariat premises.	122	0	0			
Cleaning, colouring, and painting the Town Hall, and making other necessary repairs..	573	10	8			
				25,907	12	7
Carried forward, Rupees.....				35,136	8	2

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward, Rupees	.....			35,136	8	2
Buildings.						
A bungalow at Colaba for the Medical Officer in Charge of the Lunatic Asylum..	4,838	0	8			
A building in the compound of the Grant Medical College, to accommodate the Establishments of the Oculist and Vaccinator, as well as the Country Dispensary.. ..	7,654	0	0			
				12,492	0	8
JUDICIAL DEPARTMENT.						
Annual and Petty Repairs.						
Annual repairs to the buildings in the Judicial Department, for 1850-51.	1,501	9	0			
Petty repairs to the buildings in the Judicial Department...	1,896	15	7			
				3,398	8	7
Certain Works.						
Substituting plank flooring for the stone pavement in the cells in the upper storey of the southern building in the County Jail, and in the ward and verandah occupied by the prisoners of the Court of Requests ..	1,460	0	0			
A cudjan shed near the Police Chowkey at Mattoonga, for the use of the police horses.	51	0	0			
Four cudjan necessaries, with six seats, in the yards of the House of Correction, for the use of the European prisoners....	49	12	0			
A tiled roof over the outer part of the four condemned cells in the County Jail.. ..	250	0	0			
Replacing six panes of glass in the windows of the Cattle Pound on the Esplanade, and iron barring the windows in the Serjeant's Quarters, also one in the Chowkey.. ..	24	3	9			
Certain alterations to the Picket Chowkey on the Esplanade..	808	4	0			
Two new moveable docks on each side of the present one in the Court House..	43	4	4			
Closing five covered drains, and substituting for them small tanks of masonry, with wooden covers, at the County Jail.. ..	63	6	0			
				2,749	14	1
Buildings.						
None.						
Carried forward, Rupees	.....			53,776	15	6

Names of Works.	Amount.	Total.
	Rs. a. p.	*Rs. a. p.*
Brought forward, Rupees	.....	53,776 15 6
TERRITORIAL DEPARTMENT.		
Annual and Petty Repairs.		
Annual repairs to the buildings in the Territorial Department, for 1850-51..	1,249 5 11	
Petty repairs to the buildings in the Territorial Department.	2,461 12 0	
		3,711 1 11
Certain Works.		
Removing and re-erecting the Custom Chowkey at Sonapoor, and the Custom Chowkey at Colaba	267 7 0	
Constructing an additional sluice within the reservoir of the Soolaman Shah Salt Works.	224 0 0	
		491 7 0
Buildings.		
None.		
ECCLESIASTICAL DEPARTMENT.		
Annual and Petty Repairs.		
Annual repairs to the buildings in the Ecclesiastical Department, for 1850-51..	206 0 0	
Petty repairs to the buildings in the Ecclesiastical Department	768 3 9	
		974 3 9
Certain Works.		
Renewing the gate of the Scotch Burial Ground	56 14 0	
		56 14 0
Buildings.		
A new shed for the protection of funeral parties at the Protestant Burial Ground at Back Bay	305 0 0	
		305 0 0
MARINE DEPARTMENT.		
Annual and Petty Repairs.		
Annual repairs to the buildings in the Marine Department, for 1850-51..	1,403 7 0	
Petty repairs to the buildings in the Marine Department....	1,561 2 0	
		2,964 9 0
Carried forward, Rupees	.....	62,280 3 2

Names of Works.	Amount.	Total.
	Rs. *a.* *p.*	*Rs.* *a.* *p.*
Brought forward, Rupees	.....	62,280 3 2
Certain Works.		
A cudjan shed required for the thermometers at the Colaba Observatory	158 0 0	158 0 0
Buildings.		
None.		
Grand Total, Rupees Sixty-two thousand Four hundred and Thirty-eight, Annas Three, and Pies Two.		62,438 3 2

Statement of the Sums expended by the Garrison Engineer and Civil Architect at the Presidency, from 1st May 1850 to 30th April 1851.

Names of Officers.	Annual and Petty Repairs.	Certain Works.	Buildings.	Total.
Captain J. H. G. Crawford, Garrison Engineer and Civil Architect, and Captain J. Estridge, Acting Garrison Engineer and Civil Architect at the Presidency.	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*
General Department	9,228 11 7	25,907 12 7	12,492 0 8	47,628 8 10
Judicial ditto	3,398 8 7	2,749 14 1	0 0 0	6,148 6 8
Territorial ditto	3,711 1 11	491 7 0	0 0 0	4,202 8 11
Ecclesiastical ditto	974 3 9	56 14 0	305 0 0	1,336 1 9
Marine ditto	2,964 9 0	158 0 0	0 0 0	3,122 9 0
Grand Total	20,277 2 10	29,363 15 8	12,797 0 8	62,438 3 2

Statement showing the Cost of Engineering and General Superintendence of the Garrison Engineer and Civil Architect's Department, for the above period.

Names of Officers.	Expense of Establishment per annum.	Expenditure.	Rate per cent.
	Rs. a. p.	*Rs. a. p.*	
Captain J. H. G. Crawford, Garrison Engineer and Civil Architect, and Captain J. Estridge, Acting Garrison Engineer and Civil Architect at the Presidency	14,183 1 4	62,438 3 2	$22\frac{1}{1}\frac{1}{6}$

(Signed) J. ESTRIDGE, Captain,
Acting Garrison Engineer and Civil Architect at the Presidency.

No. 3344 of 1851.

To

The Secretary to the Military Board,

Bombay.

Sir,

I have the honor to forward a Statement of the Expenditure of the Public Work Department, in the Southern Provinces, for the Year ending the 30th April 1851, exhibiting the Amounts spent for Repairs, Annual Repairs, and New Works, in the Civil and Military Departments separately, with the actual charge for Superintendence, and the per-centage it bears to the whole amount expended.

Statement of Expenditure in the Military and Civil Departments of the several Executive Officers of the Public Work Department in the Southern Provinces.

Names of Divisions.	Amount expended on each.			Amount of Superintendence.			Superintendence per-centage.
POONA.	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*	
Military Department.							
Repairs	11,814	1	3				
Annual Repairs	10,885	7	3				
New Works	33,290	9	4				
Military Department....Total	55,990	2	3				
Civil Department.							
Repairs	3,170	6	0				
Annual Repairs	6,032	12	0				
New Works	2,324	6	6				
Civil Department .....Total	11,527	8	6				
Military Department ....Total	55,990	2	3				
Grand Total	67,517	10	9	20,030	1	9	29$\frac{4}{7}$

Names of Divisions.	Amount expended on each.			Amount of Superintendence.			Superintendence percentage.
AHMEDNUGGUR.	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*	
MILITARY DEPARTMENT.							
Repairs	2,983	6	11				
Annual Repairs	3,605	8	9				
New Works	5,605	2	0				
Military Department....Total	12,194	1	8				
CIVIL DEPARTMENT.							
Repairs	1,412	10	4				
Annual Repairs	629	10	11				
New Works	5,925	7	10				
Civil Department .....Total	7,967	13	1				
Military Department ....Total	12,194	1	8				
Grand Total	20,161	14	9	5,383	15	0	$26\frac{5}{8}$
BELGAUM.							
MILITARY DEPARTMENT.							
Repairs	3,149	2	4				
Annual Repairs	4,757	3	3				
New Works..	2,435	13	1				
Military Department....Total	10,342	2	8				
CIVIL DEPARTMENT.							
Repairs	2,513	10	7				
Annual Repairs	20,979	7	10				
New Works	22,822	3	9				
Civil Department .....Total	46,315	6	2				
Military Department ....Total	10,342	2	8				
Total	56,657	8	10				
Deduct for Extra Establishment.	2,488	13	5				
Grand Total	54,168	11	5	12,948	11	11	$23\frac{7}{8}$
DHARWAR.							
MILITARY DEPARTMENT.							
Repairs	308	10	6				
Annual Repairs	65	12	1				
New Works	519	1	5				
Military Department....Total	893	8	0				

Names of Divisions.	Amount expended on each.			Amount of Superintendence.			Superintendence percentage.
CIVIL DEPARTMENT.	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*	
Repairs	16,507	9	2				
Annual Repairs	4,058	7	11				
New Works	17,624	5	3				
Civil Department .....Total	38,190	6	4				
Military Department....Total	893	8	0				
Grand Total	39,083	14	4	13,024	4	8	$33\frac{5}{6}$
KHOLAPOOR.							
MILITARY DEPARTMENT.							
Repairs	0	0	0				
Annual Repairs	1,930	3	2				
New Works..	5,499	11	4				
Military Department....Total	7,429	14	6				
CIVIL DEPARTMENT.							
Repairs	0	0	0				
Annual Repairs	120	1	11				
New Works..	0	0	0				
Civil Department .....Total	120	1	11				
Military Department....Total	7,429	14	6				
Grand Total	7,550	0	5	1,380	4	9	$18\frac{1}{4}$
SHOLAPOOR.							
MILITARY DEPARTMENT.							
Repairs	0	0	0				
Annual Repairs	1,901	0	0				
New Works..	3,080	8	3				
Military Department....Total	4,981	8	3				
CIVIL DEPARTMENT.							
Repairs	0	0	0				
Annual Repairs	1,618	0	0				
New Works	6,400	12	0				
Civil Department .....Total	8,018	12	0				
Military Department ....Total	4,981	8	3				
Grand Total	13,000	4	3	2,494	0	0	$19\frac{3}{16}$

Names of Divisions.	Amount expended on each.			Amount of Superintendence.			Superintendence percentage.
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*	
KHANDEISH.							
MILITARY DEPARTMENT.							
Repairs	391	5	6				
Annual Repairs	528	0	6				
New Works	795	9	8				
Military Department....Total	1,714	15	8				
CIVIL DEPARTMENT.							
Repairs	5,710	9	10				
Annual Repairs	16,502	4	9				
New Works	42,326	6	11				
Civil Department .....Total	64,539	5	6				
Military Department....Total	1,714	15	8				
Grand Total	66,254	5	2	32,629	0	3	49½
SATTARA.							
MILITARY DEPARTMENT.							
Repairs	0	0	0				
Annual Repairs	1,205	12	1				
New Works	1,912	0	0				
Military Department....Total	3,117	12	1				
CIVIL DEPARTMENT.							
Repairs	2,469	0	0				
Annual Repairs	29,066	4	6				
New Works....	1,92,517	11	11				
Miscellaneous..	1,261	12	11				
Civil Department.....Total	2,25,314	13	4				
Military Department ....Total	3,117	12	1				
Grand Total	2,28,432	9	5	25,584	15	6	11
ASSEERGHUR.							
MILITARY DEPARTMENT.							
Repairs	196	7	5				
Annual Repairs	460	0	0				
New Works..	120	15	11				
Military Department....Total	777	7	4				

Names of Divisions.	Amount expended on each.	Amount of Superintendence.	Superintendence percentage.
CIVIL DEPARTMENT.	*Rs. a. p.*	*Rs. a. p.*	
None.			
Military Department....Total	777 7 4		
Grand Total	777 7 4		
DAPOOLEE.			
MILITARY DEPARTMENT.			
Repairs	601 2 4		
Annual Repairs	911 0 0		
New Works..	0 0 0		
Military Department....Total	1,512 2 4		
CIVIL DEPARTMENT.			
Repairs	35 6 0		
Annual Repairs	19 0 0		
Civil Department .....Total	54 6 0		
Military Department....Total	1,512 2 4		
Grand Total	1,566 8 4	285 5 2	$18\frac{3}{16}$
Grand Total Amount of expenditure.. ..	4,98,513 6 2		

2. The expenditure, it will be seen, is more than double that of last year, arising from its including that under the Civil Engineer of the Sattara Districts, amounting to Rupees 2,28,432-9-5 (two lacs twenty-eight thousand four hundred and thirty-two, annas nine, and pies five).

3. The per-centage the cost of superintendence bears to the gross expenditure has generally decreased: the highest rates are still those in the Khandeish and Dharwar Collectorates, arising from the comparatively inexpensive character of the works generally, their great distance apart, and their being, for the most part, works connected with irrigation, requiring, as superintendents, a class of subordinates possessing higher attainments than those who are com-

petent to undertake ordinary buildings, the construction of roads, &c.

4. The per-centage in the Sattara Districts is the smallest, but the records of the Board will prove that the apparent economy is not real; and that, in fact, the works would have been much more advantageously and profitably carried out had they been superintended by persons better qualified, and consequently higher paid.

5. With the exception of the Civil Engineer of the Sattara Districts, Captain Hart, the whole of the Executive Officers have submitted their Statements of Expenditure without comment or report of any kind on the projects executed by them; and on looking over them I cannot discover a single work that appears to call for any special notice. Captain Hart's Report is more detailed, and I transmit it for the Board's information, as there are portions of it to which he specially requests their attention.

6. One of Captain Hart's undertakings, the Bazar Peera Tunnel, being of a novel, and, therefore, both useful and interesting character for publication, I requested him to furnish a full description of it, the mode in which it has been carried out, and any rates he might have been able to deduce from the work executed, accompanied by explanatory sketches, but, on the ground that the work is still unfinished, he has replied that at present such information might be considered premature, and that when the work is finished he will do his best to comply with my wishes. A brief account has, he informs me, been submitted by him through the Commissioner, for the information of the Chairman of the Railway Committee, a copy of which, should the Board think it desirable, might of course be obtained.

I have the honor to be, &c.,
(Signed) H. B. TURNER, Captain,
Superintending Engineer, S. P.

Superintending Engineer's Office, S. P.,
Poona, 30th September 1851.

No. 631 of 1851.

GENERAL DEPARTMENT.

From

The CIVIL ENGINEER, Sattara Districts,

To

The SUPERINTENDING ENGINEER,

Southern Provinces, Poona.

Sattara, Civil Engineer's Office, 1st May 1851.

SIR,

I have the honor to submit the following Report of the Proceedings of the Civil Engineer's Department, in the Sattara Districts, for the official year 1850-51, with a Statement annexed of the Expenditure during that period, and of the Cost of Engineering and Superintendence.

2. The expenditure has been Rupees 2,28,432-9-5, (two lacs twenty-eight thousand four hundred and thirty-two, annas nine, and pies five,) which may be divided under the following heads :—

* Roads..... Rs.	1,33,196	7	2
† Bridges.....	53,020	15	2
‡ Civil Buildings.....	26,833	8	11
Military Buildings.....	3,117	12	1
Bunds and Tanks.....	11,002	1	2
Miscellaneous	1,261	12	11
Total....Rs.	2,28,432	9	5

Rs.	338	0	0
	4,000	0	0
	10,794	4	4
Rs.	15,132	4	4

* This includes Rupees 338 of the Suchew Punt's Rupees 8,750 (see para. 35).

† This includes Rupees 4,000 subscribed by the Enamdars of the Waee Valley.

‡ In this is included the sum of Rupees 10,794-4-4 expended on the Tunnel through the Jukutwarree Hill, at Sattara, the whole amount being subscribed by the followers and dependents of His Highness the late Raja, in commemoration of him.

And taking the average yearly amount of Revenue of the Sattara Territory at fourteen lacs and a half,* and deducting the amount of private subscriptions, 15,132-4-4, the expenditure on public works will be 14 per cent. of the Revenue for the official year 1850-51. The cost of engineering and superintendence, including all charges of pay to the Civil Engineer and his Establishment on the expenditure, is eleven per cent. In this per-centage is included the cost of the surveys of the Amboolee and Khoombharlee Ghaut Lines, which, if deducted from the charge on works actually executed, would somewhat decrease it.

* * * * * * * *

5. I will now proceed to notice in detail the works in the List annexed.

GENERAL DEPARTMENT.†

BRIDGES.

1*st.*—*Bridges and Drains between Sattara and Mahableshwur.*

6. The number of bridges and drains taken in hand between Sattara and Mahableshwur will be seen from the following Table :—

	Drains.														Bridges.		
	1 Waterway 5 feet span.	1 Waterway 3 feet span.	2 Waterways 3 feet span.	1 Waterway 2¼ feet span.	1 Waterway 2 feet span.	3 Waterways 5 feet span.	2 Waterways 5 feet span.	5 Waterways 5 feet span.	2 Waterways 4 feet span.	1 Waterway 4 feet span.	2 Waterways 2¼ feet span.	3 Waterways 3 feet span.	1 Waterway 1½ feet span.	1 Waterway 1 foot span.	1 Arch 20 feet span.	1 Arch 30 feet span.	4 Arches small.
Total number taken in hand	5	9	1	6	1	2	3	1	1	5	1	1	1	1	1	3	1
Number completed in 1850-51.....	5	9	1	6	1	2	3	1	1	5	1	1	1	1	1	..	1
Remaining to complete on the 1st May 1851.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..

* The average Revenue is between fourteen and fifteen lacs, of course exclusive of Inamdars, Huckdars, and Alienations of Revenue of all kinds, and the average charge against this sum is between ten and eleven lacs.

† The headings and numbers of the work refer to the list annexed.

Thirty-eight drains of sorts, one bridge, of 20 feet span, and a smaller one, have been completed, and three bridges, of 30 feet span each, commenced, one of which is nearly completed, and the remaining two in a forward state. On the completion of these works a distance of ten miles from Sattara to Bunning will be bridged and drained, with the exception of the River Yenna. From Bunning to Meera, a distance of about three miles, the line of road requires to be altered, and a regular survey made of it, before the estimate can be submitted; this portion, for the present, therefore, must remain untouched.

2nd.—Bridges and Drains between Sattara and the Neera Bridge.

7. The number taken in hand and completed during the year has been as follows:—

	Drains.					Bridges.
	1 Waterway 5 feet span.	1 Waterway 3 feet span.	2 Waterways 3 feet span.	1 Waterway 2½ feet span.	1 Waterway 2 feet span.	1 Arch of 50 feet span.
Total number taken in hand	5	17	1	2	1	1
Number completed in 1850-51	4	16	..	2	..	..
Remaining to complete on the 1st May 1851	1	1	1	..	1	1

So that during the last season twenty-two drains of sorts have been completed, and four drains and one bridge about two-thirds finished. These will complete the bridges and drains from the Neera Bridge to the foot of the Salpee Ghaut, about 12 miles.

3rd.—Bridge across the Wusna River.

8. From May to the middle of October the principal operations were entirely confined to the preparation of materials, building chunam mills, and other preliminary works,

owing to the sudden floods to which this river is liable during the above period. The foundations of the abutments were commenced in October, and completed by February, the excavation and drainage of which was found extremely difficult, and the South abutment was completed up to the cornice, and the North one built 16½ feet high. The piles for supporting the superstructure of the bridge were completely driven by the end of April to a depth of about 12 feet into the bed of the river, until they could be sunk no further than a quarter of an inch, with thirty strokes of a monkey of one thousand pounds weight. The timber work is also in a forward state, and the greater portion of the iron work ready.

4th.—Bridge across the Yenna River.

9. The abutments, wing walls, and the arch of the bridge, are completed, being about two-thirds of the whole work finished.

5th.—Bridges and Drains between Nimb Khind and Panchwar.

10. The following Table shows the number of bridges and drains taken in hand:—

	Drains.						Bridges.		
	1 Waterway 5 feet span.	1 Waterway 3 feet span.	2 Waterways 5 feet span.	1 Waterway 2½ feet span.	1 Waterway 6 feet span.	1 Waterway 12 feet span.	1 Arch 20 feet span.	2 Arches 18 feet span.	1 Arch 17 feet span.
Total number taken in hand....	5	1	1	2	1	1	2	1	1
Number completed in 1850-51..	..	..	..	..	..	..	..	..	..
Remaining to complete on 1st May 1851	5	1	1	2	1	1	2	1	1

Fifteen of the above works have been taken in hand; and although all are in a forward state, some trifling work remains to each of them before they can be pronounced as completed.

6th.—Two Drains on the Sattara and Kholapoor Road.

11. The Table below shows the quantity taken in hand and completed :—

	Drains.	
	1 Waterway 5 feet span.	4 Waterways 5 feet span.
Total number taken in hand	1	1
Number completed in 1850-51	1	..
Remaining to complete on 1st May 1851	..	1

These two drains commenced on the Kholapoor Road during the last season, one of which is finished, and the other very nearly so, are in fulfilment of His Highness the late Raja's intention to complete the portion of road from Gojowree to the plain beyond the Koloree Khind, at Shendrey, where the piece of road ordered by the Raja was to have terminated. A survey of the whole line of road, extending from Sattara to Tandoolwarree, on the banks of the Worna, was submitted by me to the late Commissioner in October last, together with a rough estimate for the construction of the bridges and drains in December following. They were forwarded to Government, strongly recommended by both Mr. Frere and the Military Board: no reply has yet been received. This line, both in a Military and Civil point of view, is of the greatest importance, the Head Quarters of the Division, and the Arsenal, being completely isolated for at least one-third of the year for want of a road, and even during the fair season the track is a very difficult one for wheeled carriages, owing to the numerous rivers and water-courses intersecting the line. As a traffic communication it is a direct feeder to the Khoombharlee Ghaut Line, and passes through a rich populous country the whole way. The Punt Preetee Needee of Kurar

having lately contributed the munificent sum of a quarter of a lac of Rupees towards the construction of a bridge across the Quoina, one of the largest rivers on the line, it is sincerely to be hoped that Government will sanction the gradual construction of the smaller bridges and drains along this important communication.

7th.—Bridge across the Quoina River near Kurar.

12. As above observed, the Punt, having given this handsome subscription towards a bridge across this large river, and the subject brought to the notice of the Supreme Government, a plan and estimate for the bridge was called for in July last. On arriving at Kurar, on my tour in January, a site was selected, a section of the river taken, and trial-pits sunk to obtain a foundation. For nearly one-half the breadth of the river a solid rock substratum was found at an inconsiderable depth, and I trust, in the course of a short time, to be able to submit these documents.

8th.—Bridge across the Kodally River.

13. The construction of a bridge across this river was sanctioned by Government in February last, for Rupees 6,503 (six thousand five hundred and three), but owing to an error in under-estimating the distance from which stone had to be brought, a fresh estimate was submitted in March following, for Rupees 8,748 (eight thousand seven hundred and forty-eight).

9th.—Travellers' Bungalow at Punderpoor.
10th.—Ditto ditto at Wangi.
11th.—Ditto ditto at Poosusaolee.
12th.—Ditto ditto at Kurar.
13th.—Supplying Furniture to Travellers' Bungalows.

14. All the above works have been completed, and other travellers' bungalows are much required in the Sattara Territory, particularly between Sattara and Punderpoor, Sattara and Kholapoor, and Kurar and the Khoombharlee Ghaut.

14th.—Civil Engineer's Office.
15th.—Civil Engineer's Store-room.

15. These works are not yet commenced, but the sites will be selected, and the ground applied for, as soon after my arrival at Sattara for the rains as possible.

16th.—Providing accommodation in the Hazree Bungalow for the Treasury.

16. This petty work has been completed, but before these premises are suited for the Commissioner's Establishment, considerable alterations and additions will be necessary.

17th.—Alterations and additions to the Civil Hospital at Sattara.

17. This work has not been yet commenced, but immediately I arrive in Sattara the buildings shall be lined out, and the work set going.

18th.—Planting Trees on the High-roads in the Sattara Districts, for the year 1850-51.

18. Contracts have been entered into for the excavation of the holes to receive the trees, and filling the same up with black earth. To the close of April 730 holes have been prepared, and during the monsoon the slips will be planted from Sattara to Wurooj, a distance of six miles. Trees have been planted on each side of the road, and the present expenditure is on an extension of the line from Wurooj towards the Neera Bridge, a length of 26 miles.

19th.—Constructing a Tunnel at Bazar Peera, Sattara.

19. This tunnel was completely driven through the range joining Enteshwar and the Fort of Sattara into the Oormooree Valley in January last. The length is 192 feet, breadth of base 30 feet, and breadth at top 24 feet, and the height from the bottom to the roof 24 feet: there still remains a small portion

at the sides and Southern end to finish off. A plan and detailed estimate for completing the work, by building entrances, and opening out the mouths, was submitted by me in September last, and sanction accorded in April following; but I was precluded from prosecuting the work until a further promised subscription of Rupees 3,476-0-0 have been received. The former subscriptions to this work by the servants and dependents of His Highness the late Raja have been collected, and amount to.....Rs. 10,233 14 9

Further subscription not yet received, as above..... 3,476 0 0

Total amount subscribed by the Natives. Rs. 13,709 14 9
Total amount sanctioned by Government. 17,791 0 0

Total....Rs. 31,500 14 9

A model of the entrance has been made, and on intimation from the Commissioner of the realization of the further amount of subscriptions, the prosecution of this interesting work need be no longer delayed.

20*th.*—*Improving the supply of Water to the Town of Sattara.*

20. During the rains of 1850 the greater portion of the town of Sattara, and the various old aqueducts supplying it with water, were surveyed by Mr. Radenhurst, of my Establishment, and carefully inspected by me, and various information collected on the subject. From all I have at present been able to learn, the following points appear to me to first require attention:—

1st.—To provide an increased supply of water to the present aqueduct, which could easily be obtained from springs on the top of Enteshwar, beyond the spot where the water from the present one is collected.

2nd.—A junction of the old and new aqueducts, to be effected so as to have either only one main channel, or, at any rate, the water to issue from one main channel of

supply, into the town, the water of both being collected in a tank or reservoir before distribution.

3rd.—A fresh distribution throughout the town, to be effected by means of iron pipes.

The sum placed at my disposal for increasing the supply of water to the town is Rupees 25,000-0-0, a totally inadequate amount for carrying out any one of the above propositions efficiently during the rains. It is my intention to ask the Commissioner to call a meeting of the principal inhabitants, with a view of ascertaining the probable amount of private subscriptions on account of this useful work. Supposing the subscriptions to fall short, perhaps the best plan would be to repair the old aqueduct built by Shao Mahraj, as originally intended. The amount above mentioned is no regular sanctioned sum for the purpose, but the appropriation of a balance paid into the treasury by His Highness the late Raja's Architect, the late Ranojee Naick, on account of Karkoonee Discount and Dustooree on the various large works he had the superintendence of.

The proper preparations of plans for improving the supply of water to the town of Sattara is a subject which I have not yet had leisure to take up: it is almost the work of one Officer alone, especially as I am absent from Sattara the whole of the fair season, and have my attention and time most fully occupied with the district works; and unless some efficient individual is appointed to assist me in this matter, I can hold out no reasonable hope of either a report or plans, sections and estimates, being submitted for a considerable time to come. The amount of subscriptions, whatever they may be, and the total amount available, would, of course, be the chief guides in submitting any projects for improving the supply of water to the town.

21*st.*—*Roads between Kurar and Punderpoor, Shamgaom Khind and Kulleedoon Khind.*

21. The two principal obstructions on this line are the

khinds above mentioned. The road over the Shamgaom Khind was contracted for and is completed, a final inspection of this work alone remaining. The road over the Kulleedoon Khind is about two-thirds finished.

22nd.—Roads between Sattara and Beejapoor, Pulsee Ghaut, Nandrey Ghaut, and Naghuz Ghaut.

Of these ghauts the two first are small, the latter a larger work; the Pulsee and Nandrey Ghauts are finished; the Naghuz about two-thirds completed.

23rd.—The Seodasheoghur Khind.

23. A line down this khind was marked out with a slope of 1 in 20 in March 1850, a footpath cut, and a plan and estimate submitted in October last. To the close of the official year no sanction has been received for its construction.

24th.—Roads between Sattara and Punderpoor, Krishna River Bank, Mahowlee, Tirputtee Khind, and Wurdunghur Khind.

24. The bank of the Krishna River has been lined out and completed with a good slope; the Tirputtee Khind finished; and the Wurdunghur Khind very nearly so.

25th.—Pelieu Khind.

25. The road over this khind is also very nearly finished.

26. On these lines of road, Kurar and Punderpoor, Sattara and Beejapoor, and Sattara and Punderpoor, all the formidable impediments may be now said to be overcome on the Sattara and Beejapoor Line: there remains one small khind near Eetch, the Kehnavee, and on the Sattara and Punderpoor Line another, the Mimunghur, which it will be most desirable to complete. It is my intention shortly to submit an estimate for clearing the roads between the different khinds which have been completed, so as to open out the roads more efficiently to cart traffic.

26th.—Clearing the Roads between Kurar and Punderpoor, Sattara and Punderpoor, and Sattara and Beejapoor.

Note.—The sanction accorded was Rupees 200 per mile, for the purpose of giving employment to the population of the Eastern districts during an apprehended scarcity, but the period of scarcity having passed over before Captain Hart availed himself of the sanction, it was cancelled.—*M. B.*

27th.—Road between Sattara and the Limb Khind.

* * * * * * *

29. This is a part of the Sattara and Waee Road, or direct Sattara and Poona Road. The portion denoted above, about four miles, was completed by the prisoners as far as the Yenna River, about two miles; the remaining distance, from the river to beyond the khind, was made by Ballajee Punt Nathoo, Inamdar of Panchwar, at his own expense. From the top of the khind another three and a half miles has been bridged and drained, the Inamdars of the Waee Valley giving Rupees 4,000, and Government another 4,000 (see para. 10 in which these works are detailed). A bridge has also been sanctioned across the Kodally River (see para. 13). It will be seen that this important line is very gradually making head. When pitched at Pussurnee I prepared a design for a bridge across the Krishna River, and also had a line (1 in 20) marked out down the Kamalkee Ghaut, but the expense being about Rupees 70,000, the probable cost of the two projects, and the uncertainty of either of them being sanctioned, deterred me from submitting them. The following very serious obstacles on the line first demand attention:—

The Yenna River.
The Krishna River.
The Kamalkee Ghaut.
The Neera River.
The Katriz Ghaut.

28th.—The Prutab Gunj Peth Road, in the Town of Sattara.—Improvements in the Town of Sattara.

30. The road in the Prutab Gunj Petta in the town has

been completed by the prisoners, with the aid of a few free labourers, and the following improvements have been effected in the town :—

A block of houses removed at the junction of the Seodasheo Prutab Gunj, Bhowaree, and Sunwar Peth Roads, which gives a convenient open space at their junction.

The roadway of a small bridge widened, leading to the vegetable market.

Some chuppers and huts removed, blocking up the entrance to the market.

A line of road carried through the market, joining the Sunwar and Prutab Gunj Peth Roads.

A large arched drain constructed on the Southern approach to the tunnel.

An approach lined out, and executed in the rough by the prisoners, from the town to the tunnel entrance, South side.

This approach partly extended into the town by the Imaumpoora Tank by the prisoners.

A line of new road, 2,740 feet long, made, running at the back of the Palace joining the Shukurwar Petta, and the Genda Mall Lines.

A vegetable market formed out of the old Engineer's Stores, yielding a yearly rent of Rupees 375, and every stall rented and occupied.

29th.—Clearing a Road over the Kailghur Ghaut.—Extension of the same to Veer Mall and Dawurwarree.—Blasting the narrowest portions of the Kailghur Ghaut.

31. This line of road over the Kailghur Ghaut, and its extension to Veer Mall and Dawurwarree, has been completed. This line in the fair season is not quite safe for carts, it being in many places where it crosses the precipices not more than 11 feet broad, with a valley of some hundreds of feet deep on the lower side. The line was opened out by Mr. Smith, and, wherever the cuttings were easy, the full breadth of road has been made; but on reaching the lines of scarp rock on the

upper portion, extending for a distance of about three miles, very little of the side cutting, which is in many places solid rock, has been blasted away, and, to increase the breadth of road where possible, slight dry stone retaining walls were built; there being no drainage in the monsoon everything is carried away, and the upper part of the line, even to a foot passenger, is scarcely passable.*

30*th.*—*Clearing a Road over the Pussurnee Khind.*

Note.—This work has been suspended by order of Government, pending the receipt of a detailed estimate for completing it.—*M. B.*

31*st.*—*Constructing a Bullock-Track over the Korol Khind.*

* * * * * *

33. A road was lined out over this khind in May last, with a slope of 1 in 25 (para. 4), and an estimate submitted for constructing a bullock-track over it, 12 feet broad, (which could eventually be opened out to the full breadth for a cart road,) in June, and its construction sanctioned in July. The work was commenced after the monsoon, in August, and carried on until November, but owing to the inefficient superintendence of it by one of the old Maistrees, formerly in His Highness the late Raja's service, I was compelled to stop it. The portion executed was done too well. Instead of forming the road 12 feet broad, the Maistry had cut into the hill side 12 feet, making the road in some places 20 feet broad. A supplementary estimate to complete it was submitted and sanctioned, but having no efficient subordinate to put on the work, it has not yet been recommenced. I hope, however, to take it in hand after the monsoon, and complete it before the close of the next working season. The total length is about ten miles, of which two have been completed.

32*nd.*—*Constructing a Road over the Churrygaum Khind.*

34. An estimate for this work, prepared by my Assistant,

* *Note by the Military Board.*—Estimate for the completion of the work has been called for.

Mr. James Smith, was submitted in March 1850, and sanctioned by Government in April, for Rupees 4,000. The work was commenced by Mr. Smith in May 1850, and in January 1851 I carefully inspected it, but as the quantity of work executed, and the system pursued in carrying it out, was so unsatisfactory, I directed it to be stopped, and intend to submit a revised plan and estimate as soon as the season opens after the monsoon. There is a balance on the work still unexpended of Rupees 831-12-10.

33*rd.*—*Constructing a Line of Road from Moondwa (close to Kurar), down the Khoombharlee Ghaut, to the Port of Chiploon.*

Note.—This important work is in progress.—*M. B.*

34*th.*—*Constructing a Line of Road up the Oormooree Valley, over the intervening Range between the Oormooree and Quoina Rivers, down the Amboolee Ghaut.*

Note.—The question of constructing this line of road is still under consideration.—*M. B.*

35*th.*—*Constructing a Bulloch-Track over the Wurrundur Ghaut to Mhar.*

37. At the commencement of the official year in May 1850 a Report was submitted by me to the late Commissioner regarding the line of road down this ghaut, being the natural outlet for traffic from the valley of the Neera River to the Port of Mhar. The line would lead from Phultun, through Bhore, to Herdosee, down this ghaut to Mhar. As a great part of the proposed line would pass through the territory of the Suchew Punt, I proposed to the Commissioner that the Punt might be requested to contribute; and, on Mr. Frere's visiting Bhore, the subject was broached to him, and he expressed his willingness to assist in this manner, and his anxiety to do anything in his power to promote a work of such great public utility, and so likely to benefit his own sub-

jects; so that, with the Punt's subscription of Rupees 8,750, and the Government sanction of an equal amount, Rs. 17,500 has been placed at my disposal for this line. At the opening of the season in November I again visited this ghaut, and selected the line down it, making it over to Mr. Smith to complete the marking it out.

Note.—This work is in progress.—*M. B.*

36th.—Constructing a Bullock-Track over the Chinch Khind.

* * * * * * *

39. This khind is situated on the direct line of road between Neera and Waee, and, at the request of the late Commissioner, a line was marked out by my Assistant, Mr. Smith, with a slope of 1 in 20, the length of the line being about two and a half miles, for the greater part, the cuttings being through solid rock, and an estimate submitted, amounting to Rupees 3,063, which was sanctioned by Government in November last. On Mr. Smith being directed to commence the work, he reported that it could not be completed for the amount. It was therefore suspended, and a fresh estimate called for, which Mr. Smith submitted, amounting to Rupees 8,389. This was returned as incorrect, and showing no details, when another was received, amounting to Rupees 7,146, which was submitted to the Military Board. Further information was called for, which was submitted, and the original sanction cancelled.

37th.—Smoothing the Line of Road between Rymutpoor and the Nahavee Ghaut.

40. This line of road is an extension of the cleared portion between Sattara and Sap, which was constructed at the sole expense of the Inamdar of Sap, the cost of the present portion from Rymutpoor to the Nahavee Ghaut has been subscribed for by Pandoorung Malhar, of Rymutpoor, the amount given being Ankoosee Rupees 800, or Company's Rupees 768. Mr. Smith was directed to begin the work in December last, but up to the close of the official year it had not been commenced.

38*th.*—*Repairing the old Mahomedan Buildings at Beejapoor.*

41. At the commencement of the official year the sum of Rupees 5,200 was sanctioned by Government for the repairs of these old buildings, being the amount of an estimate I prepared at the request of the late Commissioner. It was clearly understood that these buildings could not be put into efficient repair for this amount, or anything approaching to it, but merely the progress of decay in them to some extent arrested to the close of the official year. The following portions of work have been executed:—

Ibrahim Rozah.—The terraced roof of the Rozah, and also of the Musjid attached to it, have been thoroughly repaired, and all holes and fissures filled up; supporting the large stone beams in the outer verandah by an arched stone rib under each beam has also been commenced.

Taj Bowree.—The steps have been repaired, and also a dwarf wall built.

Jumma Musjid.—The holes and fissures in the terraced roofs have all been repaired, also a dwarf wall on the terrace, which had fallen, and a new curtain has been supplied to the Mehraub.

Ashar Mubaruk.—The difficulty and expense of procuring the immense wooden beams required to replace the injured ones was so great, that it was considered better to support the old ones by two pointed arches, 18 feet in breadth, height to the springing 20 feet, and 21 feet rise. These have been completed, and, while affording most efficient supports to the roof, in no way disfigure the building.

Gol Gomuz.—The holes and fissures in the dome and terraced roof have been all filled in and repaired.

39*th.*—*Annual repairs to Travellers' Bungalows, Sattara, for* 1850-51.

40*th.*—*Annual repairs to the Commissioner's Bungalow, Sattara.*

41*st.*—*Annual repairs to Native Buildings in the Town of Sattara.*

42*nd.*—*Repairs to Ferry Boats.*

43*rd.*—*Petty repairs for* 1850-51.

44*th.*—*Annual repairs to Roads in the Town of Sattara.*

45*th.*—*Watering and preserving Trees.*

46*th.*—*Annual repairs to Roads in the Sattara Districts.*

47*th.*—*Presenting a Gold Armlet to each of the Sons of the late Ranojee Naich.*

48*th.*—*Preparing Architectural Drawings of the Principal Mahomedan Buildings at Beejapoor.*

49*th.*—*Petty Charges for the year* 1850-51.

46. There is nothing particular to remark about any of the above but No. 48. I was called upon by the late Commissioner in August last to submit an estimate of the probable cost of preparing architectural drawings of the buildings as per margin, which was submitted at the latter end of the month, and sanctioned by Government in January following; owing, however, to the great difficulty in procuring good draftsmen for so laborious, intricate, and difficult an undertaking, I could not commence work until March last. The first building taken in hand is, perhaps, the most difficult of the whole, the Ibrahim Rozah; the progress to the end of April has, however, been satisfactory on the whole.

1. The Ibrahim Rozah.
2. Taj Bowree.
3. Mehta Mahal.
4. Jumma Musjid.
5. Ashar Mubaruk.
6. Gol Gomuz.

TERRITORIAL DEPARTMENT.

50th.—Wakeshwur Bund across the Yerla River.

47. In March 1850 a Report regarding this work was submitted by me to the late Commissioner, but having at the time no subordinates of any sort capable of taking the levels, with a view of ascertaining whether the land could be irrigated

by a dam built on this site, which had been commenced before I joined the Department, but was suspended by me until an opportunity offered. I again visited the work this season, had the levels carefully taken, and hope soon to submit a detailed Report on the subject, with a diagram showing the section of the river, and the height to which the water must be raised to irrigate the land proposed.

51st.—Godolee Tank.

48. This tank was completed in December last.

52nd.—Memadapoor Tank.

49. A retaining wall has been built at the Eastern end of this tank (the large one), in rear of the present old bund, to strengthen it, containing 65,700 cubic feet of solid masonry. The small tank has been carefully pointed on the inside, to prevent the leakage. On visiting the work in February it appeared to me that a prolongation of the retaining wall of the old tank would be extremely beneficial, if not positively necessary, for the stability of the old work. It required pointing also on the inside, and the sluices to be opened up and repaired. I accordingly submitted an estimate for these repairs, amounting to Rupees 8,540, to which the sanction of Government was given in March last: Rupees 2,500 of which, at my recommendation, was to be given by the Inamdars, &c. of the village. This will complete the retaining wall to a length of 639 feet, averaging from 6 to 43 feet high, and with the other repairs tend to the preservation of this magnificent old Mahomedan work.

50. In my last year's Report I remarked on the amazing capabilities of the Sattara Districts to the westward for irrigation, by means of dams across the various rivers; but I regret to notice that during the last year's working season I have not a single work of this nature to submit, which has even been commenced on, arising entirely from an utter want of an experienced subordinate in this description of works.

JUDICIAL DEPARTMENT.

53rd.—Constructing a Jail at Mahableshwur.

* * * * * * *

55. This work is very nearly completed, and the way in which it has been executed reflects credit on Serjeant Mulligan, who was the Resident Overseer of the work.

MILITARY DEPARTMENT.

54th.—Annual Repairs to the Military Buildings at Sattara, for 1849-50.

Ditto ditto for 1850-51.

55th.—Constructing an additional Room to the Quarter Guard of the 18*th Regiment N. I.*

56th.—Enlarging the Gun-shed in the Golundauze Lines, Sattara.

I have the honor to be, &c.,

(Signed) P. L. HART, Captain,

Civil Engineer, Sattara Districts.

Expenditure on Public Works in the Sattara Districts, from the 1st *May* 1850 *to the* 30th *April* 1851.

No. referred to in the Report.	Description of Work.	Date of Sanction.	Amount of Sanction.	Expenditure during the official year 1850–51.	Remarks.
	GENERAL DEPARTMENT.		*Rs. a. p.*	*Rs. a. p.*	
	Bridges.				
1	Bridges and drains between Sattara and Mahableshwur	G. L. 1930, 5 May 1849.	.....	24,039 14 7	
2	Bridge and drains between Sattara and Neera Bridge	Do. do.	.....	11,740 0 0	
3	Bridge across the Wusna River	Do. do.	15,000 0 0	6,955 5 1	
4	Bridge across the Yenna River	Do. do.	3,000 0 0	4,278 11 6	
5	Bridges and drains between Nimb Khind and Panchwar	G. L. 2124, 10 May 1850.	* 8,000 0 0	5,173 0 0	* Of this amount Rs. 400 was subscribed by the Enamdars of the Waee Valley.
6	Two drains on the Sattara and Kholapoor Road	Com. L. 1097, 8 Oct. 1850.	.....	834 0 0	
7	Bridge across the Quoina River near Kurar	No sanction yet received.	† 25,000 0 0	.....	† This sum of Rs. 25,000 is the subscription towards the work by the Punt Preetee Needee of Kurar.
8	Bridge across the Kodally River	Do. do.			
				53,020 15 2	
	New Buildings and Works.				
9	Travellers' bungalow at Punderpoor	G. L. { 1930, 5 May 1849. / 2535, 24 June 1850.	1,500 0 0 / 255 0 0	955 0 0	
10	Travellers' bungalow at Wangi	G. L. 5261, 4 Dec. 1849.	600 0 0	603 10 2	
11	Travellers' bungalow at Poosusaolee	Do. do.	600 0 0	589 0 0	

12	Travellers' bungalow at Kurar	G. L.	1930,	5 May	1849.	1,500	0	0	.....		
13	Supplying furniture to travellers' bungalows	G. L.	3496,	4 Sept.	1850.	598	0	0	594	0	0
14	Civil Engineer's office at Sattara	G. L.	3579,	11 Sept.	1850.	1,382	0	0	.....		
15	Civil Engineer's work-shed and store-room	G. L.	294,	17 Jan.	1851.	3,844	0	0	.....		
16	Providing accommodation in the Hazree Bungalow for the Treasury	G. L.	2195,	7 Mar.	1851.	155	0	0	.....		
17	Alterations and additions to the civil hospital, Sattara	G. L.	1936,	10 May	1851.	4,538	0	0	.....		
18	Planting trees on the high-roads, for 1850-51	G. L.	3432,	27 Aug.	1850.	1,000	0	0	332	0	0
19	Constructing a tunnel at Bazar Peera, Sattara	Com. L.	662,	25 April	1851.	10,233	14	9	* 10,794	4	4
		G. L.	1323,	14 April	1851.	3,476	0	0			
						17,791	0	0			
20	Improving the supply of water to the town of Sattara	G. L.	2185,	13 May	1850.	† 25,000	0	0	.....		
									13,867	14	6
	New Roads.										
21	Between Kurar and Punderpoor, Shamgaom Khind, Kulleedoon Khind	G. L.	53,	3 Jan.	1850.	.....			9,101	10	1
22	Between Sattara and Beejapoor, Pulsee Ghaut, Nandrey Ghaut, Naghuz Ghaut	G. L.	53,	3 Jan.	1850.	.....			12,334	12	10
23	Seodasheoghur Khind	No sanction yet received.									
24	Between Sattara and Punderpoor, Krishna River Bank, Tirputtee Khind, Wurdunghur Khind	G. L.	53,	3 Jan.	1850.	.....			13,463	0	2
25	Pelieu Khind	G. L.	962,	25 Feb.	1850.	17,000	0	0	15,262	1	9
		G. L.	1898,	9 May	1851.	4,773	0	0			
				Carried over, Rs.		.....			50,161	8	10

* Private subscriptions by followers and servants of H. H. the late Raja, Rs. 13,709-14-9.

† Appropriation of a balance of the Troop Pagah in the late Raja's Treasury.

No. referred to in the Report.	Description of Work.	Date of Sanction.	Amount of Sanction.	Expenditure during the official year 1850-51.	Remarks.
			Rs. a. p.	*Rs. a. p.*	
		Brought over, Rs.	.....	50,161 8 10	
26	Clearing roads between Kurar and Punderpoor, Sattara and Beejapoor, and Sattara and Punderpoor	G. L. 4249, 30 Oct. 1850.	64,000 0 0	.....	
27	Road between Sattara and the Limb Khind	The work executed by Prisoners	.....	1,689 5 10	
28	Prutab Gunj Peth Road, in the town of Sattara..	Do. do.....	.....	315 15 7	
	Improvements in the town of Sattara	G. L. 3596, 30 April 1850	5,000 0 0	4,170 0 0	
	Do. do.....	G. L. 3077, 5 Aug. 1850.	760 0 0	760 0 0	
	Do. do.....	G. L. 3129, 7 Aug. 1850.	426 0 0	426 0 0	
29	Clearing a road over the Kailghur Ghaut.....	G. L. 1930, 5 May 1849.	7,000 0 0	2,711 9 2	
	Extension of same to Veer Mall and Dawurwarree.	G. L. 4052, 19 Oct. 1850.	4,711 0 0	571 3 1	
	Blasting narrowest portions of Kailghur Ghaut ..	G. L. 908, 4 Mar. 1851.	4,000 0 0	.....	
30	Clearing road over the Pussurnee Khind.....	G. L. 4279, 11 Oct. 1850.	20,000 0 0	39,541 11 2	
31	Constructing bullock-track over the Korol Khind.	G. L. { 3396, 17 July 1850. / 1278, 25 Mar. 1851.	5,000 0 0 / 3,056 0 0	2,599 13 9	
32	Constructing road over the Churrygaum Khind..	G. L. 1413, 16 April 1850.	4,000 0 0	3,168 3 2	
33	Constructing a line of road from Moondwa, down the Khoombharlee Ghaut, to Chiploon.....	G. L. 1677, 12 April 1850.	.....	115 0 0	* Rs. 35,860-11-9 appropriated from a balance in the Troop Pagah Account in H. H. the late Raja of Sattara's Treasury.
34	Constructing a line of road up the Oormooree Valley, over the intervening range between the Oormooree and Quoina Rivers, down the Amboolee Ghaut	G. L. 1715, 13 April 1850.	2,000 0 0 / 2,000 0 0 / *35860 11 9	211 0 0 / 531 0 0 /	

35	Constructing a bullock-track down the Wurrundur Ghaut to Mhar	G. L.	2409,	23 May	1850.	* 17,500	0	0	338	0	0
36	Constructing a bullock-track over the Chinch Khind	G. L.	4623,	29 Nov.	1850.	3,063	0	0	.....		
37	Smoothing the line of road between Rymutpoor and the Nahavee Ghaut	Com. L.	1374,	19 Dec.	1850.	† 768	0	0	.....		
	Repairs to Buildings.								1,07,310	6	7
38	Repairing the old Mahomedan buildings at Beejapoor	G. L. / G. L.	448, / 1667,	22 Jan. / 11 Apr.	1850. / 1850.	5,200	0	0	2,469	0	0
	Annual Repairs to Buildings.								2,469	0	0
39	Travellers' bungalow, Sattara, for 1850-51	M. B. L.	3398,	9 May	1850.	317	0	0	308	2	6
40	Commissioner's Bungalow, for 1850-51	M. B. L.	3389,	9 May	1850.	511	0	0	492	0	0
	Do. do. for 1851-52	G. L.	721,	24 Feb.	1851.	263	0	0	66	0	0
41	Native buildings, town of Sattara, for 1850-51	Com. L.	611,	17 June	1850.	.....			2,041	0	0
42	Repairs to ferry boats	Do.		do.		.....			123	0	0
43	Petty repairs for 1850-51	Do.		do.		.....			150	1	5
	Annual Repairs to Roads.								3,180	3	11
44	In the town of Sattara, for 1849-50	.....				.....			546	3	10
45	Watering and preserving trees, for 1849-50	.....				.....			268	12	9
46	Roads in the Sattara districts, for 1850-51	G. L.	1904,	14 May	1850.	25,218	0	0	25,071	0	0
	Miscellaneous.								25,886	0	7
47	Presenting a gold armlet to two of the sons of the late architect to H. H. the late Raja	.....				.....			1,000	0	0
				Carried over, Rs.		.....			1,000	0	0

* Of this amount Rs. 8,750 has been subscribed by the Punt Suchew, of Bhore.

† The whole amount, 800 Ankoosee Rupees, given by Pandoorung Mulhar, of Rymutpoor.

No. referred to in the Report.	Description of Work.	Date of Sanction.	Amount of Sanction.	Expenditure during the official year 1850-51.	
			Rs. a. p.	*Rs. a. p.*	*Rs. a. p.*
		Brought over, Rs.	.....	1,000 0 0	
48	Preparing architectural drawings of the principal Mahomedan buildings at Beejapoor.....	G. L. 206, 14 Jan. 1851.	9,480 0 0	107 0 0	
49	Petty charges for 1850-51	.....	.....	154 12 11	
				1,261 12 11	
	Total Expenditure in the General Department..	.....	.....	.....	2,06,996 5 8
	TERRITORIAL DEPARTMENT.				
	Bunds.				
50	Wakeshwur Bund, across the Yerla River	G. L. 1938, 5 May 1849.	9,500 0 0	92 2 6	
	Tanks.				
51	Godolee Tank	Com. L. 539, 4 June 1850.	.....	3,167 10 10	
52	Memadapoor Tank	G. L. { 7172, 4 Dec. 1849. / 2279, 8 March 1851.	8,000 0 0 / 8,540 0 0	7,742 3 10	
				11,002 1 2	
	Total Expenditure in the Territorial Department.	.....	.....	.....	11,002 1 2

	JUDICIAL DEPARTMENT.					
53	Constructing a new jail at Malcolm Peth	G. L. { 144, 17 Jan. 1850. 5089, 5 Sept. 1850.	6,148 0 0 / 2,538 0 0	7,316 6 6		
				7,316 6 6		
	Total Expenditure in the Judicial Department ..	.....	.....	.....	7,316 6 6	
	MILITARY DEPARTMENT.					
54	Annual repairs to the military buildings, Sattara, for 1849-50.....	.....	.....	77 12 1		
	Annual repairs to the military buildings, Sattara, for 1850-51..	M. B. L. 3382, 8 May 1850.	1,212 0 0	1,128 0 0		
55	Constructing an additional room to the quarter guard 18th Regiment N. I.....	{ M. B. L. 4788, 19 June 50. G. L. 2519, 28 Aug. 1850.	308 0 0 / 35 0 0	330 0 0		
56	Enlarging the gun-shed in the Golundauze Lines..	G. L. 2805, 25 Sept. 1850.	1,967 0 0	1,582 0 0		
				3,117 12 1		
	Total Expenditure in the Military Department ..	.....	.....	.....	3,117 12 1	
				Grand Total Expenditure, Rupees	2,28,432 9 5	

Statement showing the Expense of Engineering and Superintendence.

	Rs.	a.	p.
Total amount of current expense bills, for the official year 1850-51..	26,100	3	7
Deduct,			
Petty repairs... .. .. Rs. 150 1 5			
Petty charges.. .. .. 154 12 11			
Pay to peons, &c. of the travellers' bungalows.. 210 5 9			
	515	4	1
Total charges of Engineering and Superintendence.	25,584	15	6

Abstract of the Expenditure from the 1st May 1850 to the 30th April 1851, being for the official year 1850-51.

	Rs	a.	p.
Roads	1,33,196	7	2
New roads .. .. .. Rs. 1,07,310 6 7			
Annual repairs to roads. 25,886 0 7			
Bridges	53,020	15	2
Civil buildings	26,833	8	11
New works and buildings .. .. Rs. 13,867 14 6			
Repairs to ditto 2,467 0 0			
Annual repairs to ditto 3,180 3 11			
Judicial buildings. 7,316 6 6			
Military buildings..	3,117	12	1
Bunds and tanks..	11,002	1	2
Miscellaneous	1,261	12	11
Grand Total.... Rs.	2,28,432	9	5

Expenditure, 1850-51.

	Rs.	a.	p.
Roads	1,33,196	7	2
Bridges	53,020	15	2
Civil buildings	26,833	8	11
Military buildings..	3,117	12	1
Bunds and tanks..	11,002	1	2
Miscellaneous	1,261	12	11
	2,28,432	9	5
Expense of Engineering and Superintendence for 1850-51. ..	25,584	15	6
Rate per cent., including all charges.	11		

(Signed) P. L. HART, Captain,
Civil Engineer, Sattara Districts.

No. 853 of 1851.

GENERAL DEPARTMENT.

To

The SUPERINTENDING ENGINEER,
Southern Provinces, Poona.

SIR,

I have the honor to submit my Annual Report, being a summary (with reference to the Statements of Expenditure and of Works performed during the official year 1850-51, forwarded to you on the 25th of July last,) of the proceedings of my Department, during the past official year.

* * * * *

15. Before quitting the subject of the works of irrigation constructed, repaired, or improved, by the Engineer Department in this Province, sometimes at considerable cost, I have to notice three particular causes of the subsequent failure, or at least partial inefficiency, of most of the works handed over by the Department in a state of efficiency on completion. These are,

1st. The failure of the feeding springs above the bundarrahs in the dry season.

2nd. The inability of villagers in some places, through paucity of numbers, or complete occupation in agriculture, to execute the more heavy works of clearing out their deeper excavations, through which their water-course may run, and removing large trees, &c. &c. brought into their reservoir by the monsoon floods, and other such essential repairs.

3rd. The ignorance or indifference of the villagers, in most if not all places, regarding the removing at proper times (of which those only on the spot can judge) of the sluices intended to carry off the deposit from their bundarrahs and water-courses, and making use of the running water

for the clearance of their reservoirs, &c., and also of immediately attending to the appearance of weakness in the earth-work flanks of a masonry breast wall or aqueduct; instead of both neglecting this, and, as I have seen in several places, actually filling up the safety waste weirs, left in the masonry work, with earthern dams.

16. The first cause of occasional failure named above at once renders the bundarrah useless, as irrigation can then only be carried on by drawing water from the reservoir, as from a tank, until the supply fails. Happily this is not of frequent occurrence in the cases of old-existing bundarrahs, the sites of most of which have been well fixed, below springs generally perennial, but its possibility is to be guarded against in the recommendation of new works on the petition of cultivators, who, in hopes of getting a bundarrah constructed, will assert without hesitation that their nullah or river contains running water all the year round.

Remarks by the Superintending Engineer, S. P.

4. *(Para.* 17.) Instead of an annual sanction, the Revenue Authorities should remit such portion of Revenue as may enable the cultivators to do the work.

17. Where the second cause of failure exists, and is fully proven by the evidence of the local Revenue Authorities, there is no doubt that there should be an annual sanction for the necessary repairs once a year, at the proper season, for the preservation of the existing revenue each year; when this is neglected, besides causing deterioration of the Revenue, it increases future labour and expense in the repairs, and endangers the permanent masonry works.

5. *(Para.* 18.) I conceive the Collector or his Deputies,

18. As the third and most frequent cause of failure is one

or the Engineer himself or his Assistants, would be perfectly justified in making such repairs; in fact their failing to do so would at present be a neglect of the interests of Government; but I think that, in point of fact, the extensive though petty irrigation of Khandeish can never be advantageously looked after by Government officials. Great works, such as masonry bundarrahs and aqueducts, should be the only things to which Government should directly contribute: the people can themselves do earth work cheaper than we can. If they do the work, they will look after it; if they do not themselves do the work, no amount of fining or instructing will teach them.

6. A very extended intimacy with works of irrigation has forced me to the conclusion that Government can never meddle advantageously with works which benefit one or two villages. The time of their servants is thrown away, and the sum expended in paying them for superintending such works would frequently serve to construct works of importance.

7. I would certainly give them advice if they require it, but nothing further through the Engineer Department. If that can generally be unmistakeably proven by the state of the work of irrigation, the villagers should either be compelled to give attention to the wants of their water-course, or should be held responsible for its injuries; and, while I think the power of making immediate slight repairs, without any reference whatever, should be vested in the Engineer Department, the amount expended on such should always be recovered from the villagers, unless the cause of injury is unmistakeably not their ignorance, but inattention to orders.

the work is a paying one, let the Collector make a certain remission, on condition of its performance.

8. I have entered in more detail than I intended on this subject, for it is, I think, the curse of India that Government are appealed to to do the most trifling work, and the people will look on during the construction with the most listless apathy, and neglect it after completion. What I have said relates to works for one or two villages only. When extensive interests are concerned, Government can advantageously do the work, but then they must superintend it afterwards.

GENERAL DEPARTMENT.

New Works.

Roads and Bridges.

31. *Improvements to the Bombay and Agra Road, from the foot of the Chandoor Ghaut to the Scindwa Fort, for* 1850-51.—The expenditure during the past official year on this work, for which there is an annual sanction of Rupees 12,000, (twelve thousand,) has been Rupees 11,993-11-0, (eleven thousand nine hundred and ninety-three, and annas eleven). The improvements carried on and completed have been as follows :—

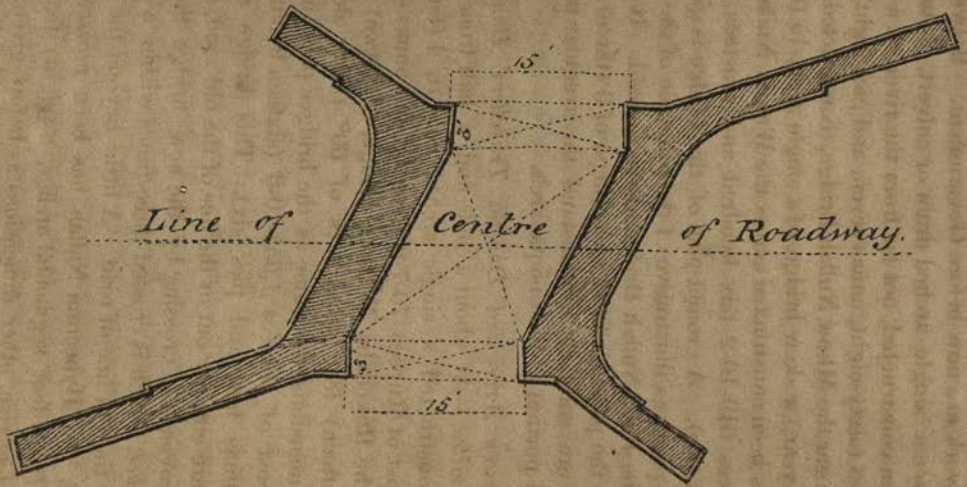
32. Between Chandore Ghaut and the Girna River, near Malligaum, a distance of 18 (eighteen) miles, nothing has been done during the past official year beyond the usual periodical repairs.

33. Between the Girna and the Moosum Rivers, near Malligaum, nothing except as above has been done on the direct line of the Agra Road; but on the Branch Road, connecting the camp and the travellers' bungalow with the Main Road, a treble slab-drain has been constructed at a cost of Rupees 70-15-8 (seventy, annas fifteen, and pies eight); and near the travellers' bungalow a simple slab-drain, at a cost of Rupees 43-5-3 (forty-three, annas five, and pies three). The new bridge in progress of construction across the Moosum River, being under a separate sanction, will be noticed below.

34. Between the Moosum River and the Chickulwall Travellers' Bungalow, a distance of 8 (eight) miles, low parapets have been added to an existing treble slab-drain near the Wulwarree Bridge, at a cost of Rupees 16-9-2 (sixteen, annas nine, and pies two). The highly-embanked approaches to the Wulwarree Bridge being considered unsafe, have been surmounted by railings with terminating masonry pillars, the whole on a masonry foundation, at a cost of Rupees 200-3-6 (two hundred, annas three, and pies six). A double slab-drain has been constructed near the Chickulwall Travellers' Bungalow, at a cost of Rupees 85-10-9 (eighty-five, annas ten, and pies nine).

35. Between Chickulwall and Arvee Travellers' Bungalows, 10½ (ten and a half) miles. The work of improvements and additions to the Kanowlee Bridge, near Chickulwall, having been executed on a separate sanction, will be noticed below. The following works have been executed on the line of road between the Kanowlee Bridge and the Chowka Nullah Bridge:—A single arched culvert, 6 (six) feet span, at a cost of Rupees 120-10-1 (one hundred and twenty, annas ten, and pie one); adding low parapets to an existing single slab-drain, at a cost of Rupees 9-3-3 (nine, annas three, and pies three); the same in another place, at a cost of Rupees 9-2-4 (nine, annas two, and pies four); the same again, at a cost of Rupees 5-14-11 (five, annas fourteen, and pies eleven); a double slab-drain, at a cost of Rupees 69-0-7

(sixty-nine, and pies seven); a treble slab-drain, at a cost of Rupees 135-11-4 (a hundred and thirty-five, annas eleven, and pies four); and a single arched culvert, five (5) feet span, at a cost of Rupees 157-12-5 (one hundred and fifty-seven, annas twelve, and pies five). Further on low parapets have been added to an existing single slab-drain, at a cost of Rupees 4-15-10 (four, annas fifteen, and pies ten). Near the Pudolie Bridge, (constructed during the previous year,) a slab-drain of four waterways has been constructed, at a cost of Rupees 144-14-6 (one hundred and forty-four, annas fourteen, and pies six). Near an old temple at Jhorgah a single arched culvert, 7 (seven) feet span, has been constructed, at a cost of Rupees 134-10-8 (one hundred and thirty-four, annas ten, and pies eight). At Jhorgah a double slab-drain has cost Rupees 95-9-10 (ninety-five, annas nine, and pies ten). Further on, near the Naundan Bridge, (constructed during the previous year,) 2 (two) slab-drains, of 6 (six) waterways each, have been constructed, one at a cost of Rupees 302-12-2 (three hundred and two, annas twelve, and pies two), and the other at a cost of Rupees 274-4-3 (two hundred and seventy-four, annas four, and pies three). At the foot of the small Ghaut, about half way between Jhorgah and Arvee, is Koothee Nullah. Here has been constructed a rubble masonry bridge, of 3 (three) arches, 15 (fifteen) feet span, and arc of 60° (sixty degrees) breadth, under soffit of arches 21 (twenty-one) feet, and a clear width of roadway 18 (eighteen) feet, completed at a cost of Rupees 1,215-1-5 (twelve hundred and fifteen, anna one, and pies five); and a little further on a single arched bridge, of the same dimensions, has been constructed across the Soondee Nullah, at a cost of Rupees 812-9-9 (eight hundred and twelve, annas nine, and pies nine). Not far from the Boree River a skew bridge, of a single arch, 15 (fifteen) feet span, has been constructed across the Poor Nullah, at a cost of Rupees 396-9-1 (three hundred and ninety-six, annas nine, and pie one), and near this a double slab-drain, at a cost of Rupees 106-10-2 (one hundred and six, annas ten,


15'
Line of Centre of Roadway.
15'

and pies two). The Boree River, which is now crossed, will, it is hoped, be bridged before the next monsoon, and noticed as such in the next Annual Report: a revised design and estimate for the work are now before Government. Between this river and Arvee a single arched drain or culvert, 2 (two) feet span, has been constructed, not far from the river, at a cost of Rupees 68-7-8 (sixty-eight, annas seven, and pies eight); and beyond this, near the Mhow Nullah Bridge, (constructed during the previous year,) a skew bridge, of a single arch, 15 (fifteen) feet span, has been constructed across the Wakda Nullah, at a cost of Rupees 619-10-2 (six hundred and nineteen, annas ten, and pies two). A ground plan of this bridge is given on the opposite page, as illustrative of the principle of the design of this and the Poor Nullah Bridge above noticed. It is considered that the parallel *direct* arch rings, of 3 (three) feet in width each, are sufficient to withstand the irregular thrust of the enclosed portion of the oblique arch.

36. *Between Arvee and Dhoolia Travellers' Bungalows, twelve* (12) *miles.*—At about a mile and a half from Arvee have been constructed a single arched culvert, 4 (four) feet span, at a cost of Rupees 70-7-0 (seventy, and annas seven); and across the Rokedaba Nullah a bridge, of 2 (two) arches, each 15 (fifteen) feet span, arcs of 60° (sixty degrees), and other dimensions, the same as the bridges previously noticed, at a cost of Rupees 1,655-10-6 (sixteen hundred and fifty-five, annas ten, and pies six). This bridge and its approaches are entirely out of the line of the old road, and are a great improvement, crossing by the new bridge the same nullah but *once*, which is crossed three times within a quarter of a mile by the old line of road. A little beyond the Rokedaba Nullah, the Byheeram Nullah has been crossed by a bridge, of 2 (two) feet segmental arches, 8 (eight) feet span, and 2 (two) feet rise, other dimensions as before given, which has been completed at a cost of Rupees 873-0-9 (eight hundred and seventy-three, and pies nine). From the Byheeram Nullah it is about half a mile to the foot of the Lulling Ghaut,

and in this distance the following works have been completed during the past official year :—Adding low parapets to an old existing single slab-drain, at a cost of Rupees 9-13-5 (nine, annas thirteen, and pies five); constructing a culvert, of a single arch, 6 (six) feet span, at a cost of Rupees 211-5-3 (two hundred and eleven, annas five, and pies three); and another culvert, of a single arch, 10 (ten) feet span, at a cost of Rupees 319-8-1 (three hundred and nineteen, annas eight, and pie one). On the Lulling Ghaut, with its bridges, constructed by my predecessor, nothing requires to be done beyond the usual periodical repairs ; but at the extremity of the embankment of the last bridge so constructed a bridge, of 2 (two) arches, each 15 (fifteen) feet span, arc of 60° (sixty degrees), has been constructed, at a cost of Rupees 1,216-0-5 (twelve hundred and sixteen, and pies five). Between this bridge and the village of Lulling, the following works have been completed :—A small treble slab-drain, at a cost of Rupees 84-15-8, (eighty-four, annas fifteen, and pies eight); a culvert, of a single arch, 10 (ten) feet span, at a cost of Rupees 232-15-10 (two hundred and thirty-two, annas fifteen, and pies ten); another culvert, of a single arch, 15 (fifteen) feet span, at a cost of Rupees 410-2-1 (four hundred and ten, annas two, and pie one); a single slab-drain, at a cost of Rupees 75-1-0 (seventy-five, and anna one); another single slab-drain, at Rupees 69-3-3 (sixty-nine, annas three, and pies three); a breast wall, (at a point where the water from the Lulling Hill runs over the road, and was always washing it away,) at a cost of Rupees 99-4-1 (ninety-nine, annas four, and pie one); and a large double slab-drain, at a cost of Rupees 207-5-7 (two hundred and seven, annas five, and pies seven). In the village of Lulling, and close to the old village wall, a bridge of 2 (two) arches, each 10 (ten) feet span, arcs of 60° (sixty degrees), has been constructed, at a cost of Rupees 914-13-11 (nine hundred and fourteen, annas thirteen, and pies eleven). Between Lulling and Dhoolia the following works have been completed :—A culvert, of a single arch, 8

(eight) feet span, at a cost of Rupees 223-9-8 (two hundred and twenty-three, annas nine, and pies eight); another culvert, of a small size, of a single arch, 6 (six) feet span, at a cost of Rupees 82-1-4 (eighty-two, anna one, and pies four); a single slab-drain, at a cost of Rupees 28-4-11 (twenty-eight, annas four, and pies eleven); and lastly, a small treble slab-drain, near the Government Tank, at a cost of Rupees 69-9-6 (sixty-nine, annas nine, and pies six).

37. The whole of the bridges above noticed, correspond, for the most part, in construction with the description given in para. 45 of the Annual Report for the previous official year 1849-50. They have a plain but substantial appearance, and are not likely to require much future repairs.

* * * * * * *

40. *Converting into a Fair-weather Road the Line, 43 (forty-three) miles in length, through the Nimar Territory, between Scindwah Fort and the River Nerbudda.*—This work, which was described in the last Annual Report, was completed under the superintendence of Mr. Conductor Whittenbury, early in the past official year, at a total cost of Rupees 3,705-13-3 (three thousand seven hundred and five, annas thirteen, and pies three). This has been a useful piece of work; but by this time, after undergoing two monsoons, I have no doubt the line cleared by Mr. Whittenbury is fast returning to its original state; the fact is, that an amount, at least equal to that expended by Mr. Whittenbury, is required to be expended *annually* on this piece of road, to make it a clearly marked fair-weather road during the proper season. It is to be hoped that some such arrangement will shortly be made for annual repairs to this Nimar line of road; and that, under better and closer superintendence than can be afforded by the Civil Engineer's Department in Khandeish, it may soon take its proper standing among the fair-weather portions of the Bombay Agra Line.

* * * * * * *

43. *Constructing a Permanent Bridge over the Moosum River, at Malligaum.*—Noticed above in para. 33. This bridge, of a new construction, consisting of a number (48 in this instance) of pukka masonry piers, 14 (fourteen) feet apart, from centre to centre, supporting horizontal teakwood girders, which carry the roadway, was commenced in January last, and had made some progress at the end of the official year. Considerable difficulty was experienced in laying the foundations of the 10 (ten) piers more immediately in the bed of the river, as excavation and clearing out the water was found impracticable. By the end of the official year, however, some foundations had been laid by means of frame-work caissoons, and an artificial hydraulic line. The processes and their results will be duly noticed at the completion of the work, it is hoped, before the monsoon of 1852.

I have the honor to be, &c.

(Signed) H. W. B. BELL, Lieutenant,
Civil Engineer.

No. 228 of 1851.

MARINE DEPARTMENT.

To

The SECRETARY TO THE MILITARY BOARD.

SIR,

I have the honor to submit my Report and Statement of Expenditure for the year 1850-51.

It will be seen that the charges for Engineering amount to 28¼ per cent., which is considerably in excess of that shown in the Reports of my predecessor. This is due to the large quantity of stone and materials he had collected and charged to the breakwater, basin, &c., though unused, so that the expenditure gives an erroneous idea of the work done by each.

1847-48, 11 per cent.
1848-49, 18 do.
1849-50, 19¾ do.

In the past official year nearly the whole remainder of the foundation course of the breakwater was got in, so that the great impediment to the completion of the work no longer exists. The length of foundation laid during the season was 515 feet, against 482 in the previous one.

I have the honor to be, &c.,

(Signed) C. W. TREMENHEERE, Captain,
Engineer to the Dock-yard.

Bombay, Dock-yard Engineer's Office,
16*th December* 1851.

No. 1 OF 1850-51.

MARINE DEPARTMENT.

Statement showing the actual Expenditure upon Works carrying on under the Engineer to the Dock-yard, for the official year from 1st May 1850 to 30th April 1851.

Bombay, Dock-yard Engineer's Office, 15th Dec. 1851.

	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
1. Constructing a building-yard to the South-East of the Dock-yard and Saluting Battery, comprising three slips for building ships of war of the 1st class of Her Majesty's Navy	143	0	0	143	0	0
2. Constructing a portion of the work connected with the proposed basin and breakwater:—						
Breakwater	12,689	9	6			
Cofferdam	53	7	5	12,743	0	11
3. Rendering the buildings in the Dock-yard more secure against the risk of fire	817	1				
4. Railroad from the Factory round the Dock	8,404	5	2			
5. Erecting a beacon on the Kennery Island	1,647	6	1			
6. Erecting a platform for naval gunnery on Butchers' Island	1,795	5	2			
7. Fitting venetians to the windows of the Commander in Chief Indian Navy's Office	347	0	0			
8. Constructing a plank wall to the verandah of the Commander in Chief Indian Navy's Office	62	0	0			
9. Constructing ventilators to the two ranges of Bankshall, occupied by the Lascars attached to the Master Attendant's Department	350	0	0			
10. Erecting a shed over the 1st Slip	499	13	5			
11. Effecting certain alterations and additions to the Coal Depôt	3,637	6	9			
12. Wooden frame-work for European barracks at Kurrachee	1,048	11	11			
Repairs to the Fortifications and Buildings.						
13. Removing the portion of the rampart near the Dock	200	0	0			
Carried over, Rs.	18,809	2	0	12,886	0	11

	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought over, Rs.	18,809	2	0	12,886	0	11
14. Replacing the cadjan roof of the shed for the timber prepared for the Cofferdam.	208	5	6			
15. Effecting certain repairs and alterations to the buildings in the Dock-yard...	372	8	0			
16. Annual repairs to the buildings in the Dock and Building-yards, for 1850	3,211	0	0			
17. Annual repairs to the buildings on Butchers' Island.....	207	9	0			
18. Removing the useless portion of wall of the Indian Navy Storekeeper's Yard..	75	13	8			
19. Removing the cross wall in the verandah of the lower barracks on Butchers' Island	23	12	2			
20. Deepening the tank and well on Butchers' Island.....	3	0	0			
21. Effecting certain repairs to the premises of the dock-yard.	104	6	3			
22. Effecting certain repairs to the buildings on Butchers' Island	293	2	11			
23. Removing the cadjan shed over the new steamer "Zenobia."	23	4	5			
24. Repairing cadjan roof of Police Hulk "Zenobia"...	65	0	0			
25. Taking down and rebuilding walls to Slips Nos. 1, 2, and 3.....	110	5	9			
26. Preparing timber for a bridge in the Sattara territories.....	26	6	2			
27. Preparing wood-work for new Jail at Mahableshwur.....	522	0	9			
Emergent Works.						
28. Repairing the plaster of the Indian Navy Storekeeper's Office	18	12	4			
29. Repairing the plaster of the Steam-house.....	33	12	4			
30. Repairing the plaster of the Coal Depôt.	17	15	9			
31. Plank shutters for (6) six windows for the two wooden moveable offices on the new ground	34	0	0			
32. Repairing the plaster of the Assistant Storekeeper's Office of the Indian Navy ..	38	9	8¼			
33. Pointing stone work for the upper, middle, and lower Docks	97	11	9¾			
34. Fixing bolts to the windows of the Steam Factory	21	6	9			
35. Removing the cadjan roof over the late Police Hulk "Zenobia".....	14	12	1			
36. Panes of glass to the windows of the Superintendent's and Master Attendant's offices.	4	6	0			
Carried over, Rs.	24,337	3	4	12,886	0	11

	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought over, Rs.	24,337	3	4	12,886	0	11
37. White-washing the bankshall occupied by the Master Attendant's Department	6	9	11			
38. Repairing and white-washing the School-room near the Engine-house	4	15	6			
39. Making new doors and windows for Coal Depôt	34	2	1			
40. Repairing the gates at the centre entrance to the Dock-yard, and also leveling the roads at the entrance to the offices near Apollo gateway	10	13	4			
41. White-washing the Indian Navy Storekeeper's Office	34	2	5			
42. Altering the cook-room of the bankshall occupied by the lascars of the Master Attendant's Department	34	1	7			
43. White-washing, colouring, and ceiling the Commander in Chief's Office, and also white-washing and repairing the Conductor's room in the Coal Depôt	157	12	0			
44. White-washing the offices on the new ground	10	13	2			
				24,630	9	4
Rupees....				37,516	10	3

(Signed) C. W. TREMENHEERE, Captain,
Engineer to the Dock-yard.

No. 2 of 1850-51.

MARINE DEPARTMENT.

Statement showing the Cost of Engineering in the Marine Department, under the Engineer to the Dock-yard, from 1*st May* 1850 *to* 30*th April* 1851.

Bombay, Dock-yard Engineer's Office, 15*th December* 1851.

				Amount of Establishment.	Total Amount of Establishment.	Expenditure.	Rate per cent.
				Rs. a. p.	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*
Captain C. W. Tremenheere's Staff Pay for Marine and Steam Department for the month of May 1850			Rs. 600 0 0				
Ditto	ditto	June	600 0 0				
Ditto	ditto	July	600 0 0				
Ditto	ditto	August	600 0 0				
Ditto	ditto	September	600 0 0				
Ditto	ditto	October	600 0 0				
Ditto	ditto	November	600 0 0				
Ditto	ditto	December	600 0 0				
Ditto	ditto	January 1851	600 0 0				
Ditto	ditto	February	600 0 0				
Ditto	ditto	March	600 0 0				
Ditto	ditto	April	600 0 0				
				7,200 0 0			
		Carried over, Rupees		7,200 0 0			

				Amount of Establishment.	Total Amount of Establishment.	Expenditure.	Rate per cent.
				Rs. a. p.	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*
			Brought over, Rupees	7,200 0 0			
Establishment	for the month	of May 1850.....	Rs. 313 0 0				
Ditto	ditto	June	304 12 0				
Ditto	ditto	July	287 0 0				
Ditto	ditto	August	287 0 0				
Ditto	ditto	September	307 0 0				
Ditto	ditto	October	307 0 0				
Ditto	ditto	November	307 0 0				
Ditto	ditto	December	307 0 0				
Ditto	ditto	January 1851	305 12 10				
Ditto	ditto	February	252 0 0				
Ditto	ditto	March	252 0 0				
Ditto	ditto	April	252 0 0				
				3,481 8 10			
					10,681 8 10	37,516 10 3	28 4 0

(Signed) C. W. TREMENHEERE, Captain,
Engineer to the Dock-yard.

No. 1836 of 1851.

PUBLIC WORKS. GENERAL DEPARTMENT.

To

THE SECRETARY TO THE MILITARY BOARD,

Bombay.

SIR,

I have the honor to forward the Annual General Report of the proceedings in the Public Works Department in Scinde, during the official year 1850-51.

2. The Total Expenditure, from the 1st May 1850 to the 30th April 1851, in the Military, Civil, and Marine Departments, are as follows :—

Total Expenditure in the Military, Civil, and Marine Departments, of the several Executive Officers in Scinde.

Names of Divisions.	Amount expended in each.			Amount of Superintendence.			Superintending per-centage.		
LOWER SCINDE.	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*
MILITARY DEPARTMENT.									
Repairs and alterations.. ..	9,449	1	5						
Annual repairs..	1,494	0	0						
Barrack Department.... ..	4,068	12	7						
New works.....	24,169	0	3						
Total, Military Department..	39,180	14	3						
CIVIL DEPARTMENT.									
Repairs and alterations.. ..	410	0	9						
Annual repairs..	56	0	0						
Total, Civil Department..	466	0	9						
MARINE DEPARTMENT.									
Repairs and alterations	67	9	1						
Total, Military Department..	39,180	14	3						
Total, Civil Department.....	466	0	9						
Grand Total....	39,714	8	1	16,752	4	10	422	10	$\frac{9}{76}$

Names of Divisions.	Amount expended in each.			Amount of Superintendence.			Superintending per-centage.		
CENTRAL SCINDE.	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*
MILITARY DEPARTMENT.									
Repairs	4,085	8	7						
Annual repairs..	900	0	5						
New works	8,791	10	4						
Total, Military Department..	13,777	3	4						
CIVIL DEPARTMENT.									
Repairs	195	0	2						
Annual repairs..	1,372	15	9						
New works	715	13	7						
Total, Civil Department.....	2,283	13	6						
Total, Military Department...	13,777	3	4						
Grand Total....	16,061	0	10	11,187	10	10	69	10	6
UPPER SCINDE.									
MILITARY DEPARTMENT.									
Repairs....	2,798	14	3						
Annual repairs..	1,200	9	4						
New works	14,041	3	8						
Total, Military Department..	18,040	11	3						
CIVIL DEPARTMENT.									
Repairs	591	4	1						
Annual Repairs.	409	11	3						
New works.....	868	15	11						
Total, Civil Department..	1,869	15	3						
MARINE DEPARTMENT.									
Repairs	36	12	0						
Annual repairs..	14	7	6						
New works.....	17	1	2						
Total, Marine Department....	68	4	8						
Total, Civil Department.....	1,869	15	3						
Total, Military Department ..	18,040	11	3						
Grand Total....	19,978	15	2	9,474	6	2	47	6	9
Total of Expenditure....	1,13,168	13	11						

I regret that as none of the Executive Officers' Returns were accompanied by Statements of Works of special interest, and as I did not join this Division till more than six months after the official year had closed, I am unable to afford information of any proceedings in the Department for publication.

I have the honor to be, &c.,
(Signed) H. B. TURNER, Major,
Superintending Engineer, Scinde.

Kurrachee, 15*th December* 1851.

No. 2065 of 1851-52.

GENERAL DEPARTMENT.

To

THE SECRETARY MILITARY BOARD,

Bombay.

SIR,

With reference to your Letter No. 9727, of the 3rd December last, I have the honor to forward the Annual Report of Works in the Northern Provinces, for the year ending 30th April 1851.

Statement of the Sums expended by each Officer under the Superintending Engineer, Northern Provinces, from the 1st May 1850 to 30th April 1851.

	In the Military Department.	In the General Department.	In the Judicial Department.	In the Revenue Department.	In the Territorial Department.	In the Political Department.	In the Ecclesiastical Department.	Total.
	Rs. a. p.	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*
Lieutenant M. Kennedy, Executive Engineer, Surat Division	1,926 14 7	11,043 15 11	2,932 0 2	1,668 12 0	805 8 4	....	203 14 0	18,581 1 0
Lieutenant W. R. Dickinson, Executive Engineer, Ahmedabad Division	7,486 1 4	13,617 5 8	3,307 14 10	2,017 12 3	2,884 2 0	2,313 6 0	63 1 9	31,689 11 10
Lieutenants G. G. Brown, H. H. James, and D. Nasmyth, Acting, and Executive Engineers, Deesa Division	20,621 4 4	47 10 0	....	....	....	....	1,340 14 2	22,009 12 6
Captain B. R. Powell, Major of Brigade, in charge of Public Works, Rajcote	1,270 10 2	....	....	....	....	695 5 0	15 8 0	1,981 7 2
Lieutenant G. Skipton, Line Adjutant, in charge of Public Works, Bhooj	1,264 12 7	....	....	....	....	284 9 6	51 15 0	1,601 5 1
Total.....	32,569 11 0	24,708 15 7	6,239 15 0	3,686 8 3	3,689 10 4	3,293 4 6	1,675 4 11	75,863 5 7

Statement showing the Cost of Engineering and General Superintendence of each Officer under the Superintending Engineer, Northern Provinces, from 1st May 1850 to 30th April 1851.

	Expense of Establishment per Annum.			Expenditure.			Rate per cent.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*
Lieutenant M. Kennedy, Executive Engineer, Surat Division.....	11,805	10	0	18,581	1	0	63	8	2
Lieutenant W. R. Dickinson, Executive Engineer, Ahmedabad Division.....	11,893	8	11	31,689	11	10	37	8	0
Lieutenants G. G. Brown, H. H. James, and D. Nasmyth, Acting, and Executive Engineers, Deesa Division	6,282	2	3	22,009	12	6	28	8	8
Captain B. R. Powell, Major of Brigade, in charge of Public Works, Rajkote ..	420	0	0	1,981	7	2	21	3	2
Lieutenant G. Skipton, Line Adjutant, in charge of Public Works, Bhooj	182	0	0	1,601	5	1	11	4	9
Total.....	30,583	5	2	75,863	5	7	40	5	0

2. During the official year 1850-51 no works of general or permanent professional interest have been executed, and there do not appear to have been any facts recorded worthy of publication.

3. From the outlay at Surat, have been expended Rupees 5,063-1-2 in constructing the Mucca Gate Bridge. From that at Ahmedabad Rupees 8,280-11-0 have been expended on the local general improvements; and Rupees 2,615-13-9 from the Goolaputtee Fund, on the Road at Veercumgaum.

4. Rupees 1,425-8-0 have been expended on the improvement of the Aboo Road, by the Engineer Department at Deesa.

I have the honor to be, &c.,

(Signed) W. B. GOODFELLOW, Lieut. Colonel,
Superintending Engineer, Northern Provinces.

Superintending Engineer's Office, N. P.,
Surat, 13th April 1852.

ROAD AND TANK DEPARTMENT.

Statement of Expenditure in the Construction and Repair of Public Works in the Road and Tank Department, from the 1st of May 1850 to the 30th April 1851.

Camp Singhur, 24th May 1852.

Names of Works.	Amount.			Total.		
Works connected with the Communication of the Country.	*Rs.*	*a.*	*p.*	*Rs.*	*a.*	*p.*
Annual repairs to flying bridges, for 1849-50..	30	0	0			
Ditto to Narraingaum cross-roads, for 1849-50..	181	13	1			
Ditto to roads, bridges, &c., for 1849-50, in the Poona Collectorate.	31	12	0			
Ditto to mail road for 1849-50, in do.	6,621	13	8			
Rolling mail road	35	0	0			
Annual repairs to bridges and drains on mail road, for 1849-50... ..	1,012	0	0			
Ditto to roads, bridges, &c., in the Nuggur Collectorate, for 1849-50	11	11	0			
Constructing a new piece of road near Khundallah	366	4	10			
Constructing a channel to convey rain-water into the tank near Revenue Commissioner's house...	667	6	8			
Widening the Akoordee road	1,972	14	2			
Annual repairs to roads, bridges, &c., in the Nuggur Collectorate, for 1850-51	2,867	13	4			
Ditto to roads, bridges, &c., in the Poona Collectorate, for 1850-51	20,771	14	7			
Enlarging the store-house of the Kurradee flying bridge..	79	12	4			
Improving Dapoorie bridge approaches ..	972	1	10			
Making new stone rollers.	1,631	11	6			
Repairs to Neera bridge..	2,570	12	2			
Annual repairs to flying bridge, for 1850-51..	1,161	10	8			
Widening the road from Kirkee to Dapoorie..	2,978	4	5			
Repairs to Allundee bridge	71	14	9			
Constructing a masonry drain on the road leading to Poona bridge	199	1	2			
Constructing a road from the main line to the Poona travellers' bungalow..	153	3	11			
Carried forward.. Rs.	44,389	0	1			

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward..Rs.	44,389	0	1			
Widening the road of the Khundallah travellers' bungalow.	36	7	0			
Constructing a masonry drain of one waterway across the road of the Poona travellers' bungalow.	58	8	0			
Improving Murrah Ghaut road.	1,168	15	6			
Rendering passable the road leading from the European Barracks near Ghorpurree to Poona..	177	4	11			
Rendering passable the swamp on the road from Poona to the Kurradee ford, which passes through the village of Ghorpurree ..	323	7	5			
Minor works	541	13	0			
Constructing a new road between Patus and Indapore	1,192	0	6			
Constructing a new road between Patus and Poona..	44,028	2	5			
Annual repairs to the main road between Patus and Indapore, for 1850-51. ..	3,410	0	7			
Ditto ditto ditto.....	742	2	11			
Ditto ditto between Patus and Poona for 1850-51	787	12	5			
Ditto ditto ditto.....	29	13	9			
Constructing bullock-track at Deweh Ghaut.	270	14	8			
Widening and rendering safe the approaches to the Wanowree bridge.	624	6	1			
Forming ramps of earth, &c. in the interim that drains and bridges are being built on the Patus and Poona line of road.	197	0	0			
Minor works	79	5	9			
Constructing a new road between Indapore and Hingungaum	4,382	11	10			
Repairs to masonry, wooden, and flying bridges on the Nagpore dawk line.. ..	2,609	1	0			
Repairs to branch roads leading to the bridges and flying bridges on both sides of the nullahs and rivers on the Nagpore dawk line..	1,340	10	0			
Cutting the jungle growing on parts of the road, and removing large stones on the Nagpore dawk line..	307	13	1			
Purchasing four pairs of canoes at Bombay, completed with railings, &c.	749	0	0			
Maintenance of ferrymen and haulers along the dawk line of road between Ahmednuggur and the Wurda river, during the monsoon..	3,440	5	7			
Clearing a fair-weather road between the Godavery and Wurda rivers	8,014	15	8			
Building masonry, wooden, and flying bridges, &c.	1,693	4	6			
Carried forward..Rs.	1,20,595	0	8			

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward..Rs.	1,20,595	0	8			
Repairs to three ghauts on the Nagpore dawk line	288	12	5			
Annual repairs to the newly built stable for horses at Sew river, on the Nagpore dawk line..	46	9	0			
Annual repairs to chuppers for stables for horses, and huts for ferrymen and haulers, on the Nagpore dawk line	203	2	6			
Annual repairs to the store-houses..	163	9	8			
Building masonry, wooden, and flying bridges, on the Nagpore dawk line, for 1851-52.....	3,054	8	0			
Completion of the Thull Ghaut new road....	3,995	3	0			
Improvements on ditto ditto	2,863	5	5			
Annual repairs to ditto for 1850-51..	403	14	2			
Ditto to main road from the Thull Ghaut to Chandore Ghaut, in the Nassick Sub-Collectorate	13,138	13	8			
Making stone rollers	217	3	8			
Annual repairs to cross-roads, for 1850-51 ..	1,751	3	4			
Petty repairs to ditto	149	14	10			
Repairs to Annundwelle road	154	1	1			
Improvements on the Agra line of road between the Thull Ghaut and Chandore, 1st Sanction	4,172	8	1			
Ditto ditto ditto, 2nd Sanction..	146	1	7			
Building a bridge over the Pharashery river, at Pimpulgaum	1,212	8	8			
Building two bridges over the nullahs, one between the Kadoo river and Pimpulgaum, and the other near Kokungaum, on the main road between Nassick and Chandore	782	13	9			
Building two bridges of 8 feet and 10 feet span over the nullahs Nos. 20 and 21, on the main road between the Thull Ghaut and Egutpoorah	4,069	12	4			
Building a bridge over the Undwell river ..	14,666	9	0			
Annual repairs to bridges and drains on the main road, for 1850-51	121	5	5			
Petty repairs to ditto	118	15	0			
Annual repairs to bridges and drains on the cross-roads in the Nassick Sub-Collectorate.	68	2	8			
Making a new flying bridge over the Godavery river at Nassick	6,376	11	5			
Constructing a ford with approaches, near the site of flying bridge at Nassick	818	3	11			
Improving the flying bridge at Kadoo river, between Nassick and Chandore	586	7	3			
Annual repairs to ferry boats and flying bridges, for 1850-51..	178	13	4			
Carried forward..Rs.	1,80,434	5	10			

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward.. Rs.	1,80,434	5	10			
Petty repairs and petty charges to ferry-boats and flying bridges, for 1850-51	43	4	0			
Making a bullock-track leading from the village of Kussarah to the tank at that place	198	4	8			
Making a new line of road between Kussarah and Khurdee..	60,990	9	10			
Annual repairs to the main road from the Colsette ferry to Thull Ghaut	11,579	12	2			
Making new stone rollers	94	4	8			
Repairing and widening the road leading to the Kussarah travellers' bungalow. ..	57	1	6			
Building two new boats for the use of the Colsette ferry..	327	8	0			
Constructing temporary bridges over the rivers at Mokhownah, Oomerwallee, Dhamnee, Chirpole, Phursoora, Castna, Dohola, and Pudgah, between the foot of the Thull Ghaut and the Colsette ferry	116	6	7			
Constructing flying bridges, and making canvas bags, for bridges over the rivers at Dhamnee, Shahpoor, Sarmul, and Koombharee, between the foot of Thull Ghaut and Colsette ferry	629	14	0			
Pay to haulers employed for the purpose of passing the dawk bags over the rivers at Koombharee, Sarmul, and Shahpoor, during the monsoon of 1850-51	56	12	2			
Annual repairs to roads in the cantonment of Bhewndy, for 1850-51	45	4	11			
Constructing a bridge over a nullah which divides the town of Bhewndy from Nizampore	2,460	1	2			
Clearing the road between Battana and Kamrollee, for the 4th Troop H. A., as also that between Cullian and Bhewndy ..	141	11	1			
Completing the Bhandoop road	1,069	2	7			
Constructing a new road leading to the hill of Senhora de Monte, at Bandora	2,715	10	4			
Annual repairs to roads in Salsette, for 1849-50.	3,038	4	0			
Repairing certain works on the Sankey and Ghorebunder road	131	13	9			
Repairing the foundation of the Dhysur bridge.	432	12	11			
Making six stone rollers	498	0	0			
Constructing a platform for the two new boats of the Colsette ferry..	372	9	8			
Annual repairs to roads in Salsette, for 1850-51.	18,395	1	1			
Carried forward.. Rs.	2,84,428	10	11			

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward .. Rs.	2,84,428	10	11			
Repairing the four miles of made road from the Tanna Bunder, in the direction of Panwell	2,086	0	2			
Improving the Dhysur, Goregaum, and Sankey bridges, and their respective approaches on the Ghorebunder road ..	894	6	6			
Repairing the horse-boat at the ferry between Ghorebunder and Bassein	586	0	6			
Repairing the horse-boat at Colsette	490	0	0			
Providing a raft for the Colsette ferry	600	0	0			
Constructing a horse-boat for the ferry between Ghorebunder and Bassein	250	0	0			
Repairing the ferry-boats at Oomergaum and Danoo	213	0	0			
Annual repairs to the mail road from Khapoolee to Panwell, for 1849-50.	1,283	11	1			
Ditto to the mail road from Nagotna to Mahableshwar, for 1849-50	747	13	4			
Ditto to the cross-roads in the Northern Konkan, for 1849-50.	317	10	0			
Ditto to the cross-roads in the Southern Konkan, for 1849-50	24	12	0			
Ditto to the mail road from Khapoolee to Panwell, for 1850-51.	7,414	1	5			
Ditto to the main road from Nagotna to Mahableshwar, for 1850-51	5,019	12	0			
Ditto to the cross-roads in the Northern Konkan, for 1850-51	2,764	2	1			
Ditto to the cross-roads in the Southern Konkan, for 1850-51	941	14	4			
Ditto to bridges and drains on the mail road, for 1850-51 ..	928	12	10			
Making four stone rollers	380	0	0			
Petty repairs, and petty charges	188	12	1			
Total roads, bridges, &c. ..				3,09,559	7	3
Tanks, Bunds, and Wells.						
Repairs to a well at Loonee	2	2	0			
Ditto to Joonnur aqueduct.	88	15	0			
Clearing out the tank in the Civil Lines at Poona	91	13	1			
Carried forward .. Rs.	182	14	1	3,09,559	7	3

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward..Rs.	182	14	1	3,09,559	7	3
Aqueducts for garden irrigation between Patus and Indapore	36	0	0			
Aqueducts for garden irrigation between Patus and Poona	134	7	7			
Sinking a well near the toll house on the Thull Ghaut new road	1,083	1	6			
Sinking a shaft below the small bridge on the lower portion of the Thull Ghaut new road.	95	1	4			
Repairs to Musrool bund, Nassick Sub-Collectorate	17	10	1			
Ditto to Chinchol do. do.....	9	15	8			
Ditto to Satpoor do. do.....	33	12	11			
Ditto to Kusrool do. do.....	323	10	8			
Constructing a dam across the Kurtoondah river	3,114	11	5			
Cut stone pavement to the old well at Kussarah	353	3	0			
Constructing a well at Kussarah near the tank	1,033	13	11			
Constructing a well at Kussarah near the bridge..	348	7	1			
Constructing a well at Kussarah	391	15	11			
Improving the tank at Khurdee..	225	7	10			
Facing on the inner side of the bund of the Kussarah tank..	154	14	1			
Emergent repairs, deepening two wells at Mokhownah	159	13	3			
Painting inner side of the bund of the Kussarah tank	99	8	0			
Clearing out mud from the two wells at Pudgah..	8	11	9			
Clearing out and effecting certain improvements to the tanks at Colsette	248	11	7			
Improving Wuddala tank at Panwell. ..	1,720	2	7			
Constructing a well at Chowke pendall	206	1	10			
Petty repairs	70	3	2			
Total tanks, bunds, and wells..				10,052	7	3
Buildings.						
Constructing a new travellers' bungalow at Wurgaum, on Bombay mail road	2,667	0	0			
Annual repairs to travellers' bungalow, for 1849-50	118	0	0			
Repairs to Poolshair Palace	101	8	9			
Annual repairs to Khair Mamlutdars Kutcherry, for 1850-51	54	0	0			
Carried forward..Rs	2,940	8	9	3,19,611	14	6

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward.. Rs.	2,940	8	9	3,19,611	14	6
Draining Revenue Commissioner's office compound..	584	8	2			
Stone gutters under eaves of staging pendalls..	358	13	0			
Tiling the new roof of the Collector's bungalow and its out-houses at Ootoor ..	1,034	3	3			
Constructing a cook-room to the Kopergaum travellers' bungalow, in the Nuggur Collectorate	180	15	5			
Kurkallah Kutcherry	919	12	5			
Repairing the roof of the Wye travellers' bungalow	552	10	4			
Annual repairs to travellers' bungalow, for 1850-51	954	9	9			
Ditto to staging pendalls, for 1850-51.	222	7	11			
Ditto to travellers' bungalow in the Nuggur Collectorate, for 1849-50	22	0	0			
Ditto ditto ditto for 1850-51..	911	10	4			
Petty repairs	1,317	15	0			
Constructing five travellers' bungalows between Poona and Indapore..	5,212	2	8			
Constructing a travellers' bungalow at Patus..	109	7	11			
Ditto ditto at Jeejoorie..	837	15	9			
Repairing the chowkee at the top of the Deweh Ghaut..	15	0	0			
Annual repairs to the travellers' bungalow at Indapore	129	13	8			
Furniture for six travellers' bungalows between Poona and Indapore	417	1	3			
Annual repairs to travellers' bungalows and *dhurrumsallas*..	267	14	1			
Petty repairs to ditto ditto ..	100	1	0			
Repairs to furniture	10	9	3			
Annual repairs to military buildings	125	12	1			
Annual and special repairs to ditto.. ..	332	8	7			
Petty repairs to Nassick jail	28	15	7			
Ditto to Moonsiff's court house at Pimpulgaum..	16	0	7			
Extra work done in the jail compound at Nassick	48	14	11			
Annual repairs to military buildings	69	9	8			
Petty repairs to ditto	43	2	0			
Building a toll-house on the Thull Ghaut new road	4,961	4	1			
Annual repairs to travellers' bungalow and dhurrumsalla, for 1850-51.	159	15	7			
Ditto to store-room at Bhewndy, for 1850-51	35	4	2			
Carried forward.. Rs.	22,921	11	2	3,19,611	14	6

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward..Rs.	22,927	11	2	3,19,611	14	6
Providing a new tie-beam for one of the trusses of the travellers' bungalow at Pudgah	207	10	1			
Ditto ditto ditto at Kussarah..	281	11	6			
Replacing bamboo battens, tiles, &c. of the dhurrumsalla at Kussarah	67	4	8			
Annual repairs to the hospital of the Native Veteran Battalion at Bhewndy, for 1850-51.	19	1	4			
Providing new bolts, fastening hooks, screws, &c. to the travellers' bungalows at Bassein, Datewra, Seergaum, Chinchnee, Dhanoo, and Oomergaum	44	5	7			
Providing new bolts, fastening panes of glass, &c. to the travellers' bungalows at Kalhair, Pudgah, and Shahpoor	30	11	10			
Providing new bolts, fastenings, rattaning chairs, &c. at travellers' bungalows at Khurdee and Kussarah	13	15	11			
A new chair supplied to the Khurdee bungalow	4	1	6			
Hips and ridge set in chunam, of the hospital of the Native Veteran Battalion at Bhewndy.	17	9	6			
Providing oil, towels, &c. to the travellers' bungalows	24	6	0			
Providing iron bolts, slides, fastenings, &c. to the doors and windows, setting in chunam ridge of the hospital of the Native Veteran Battalion at Bhewndy..	34	11	9			
Re-constructing the quarter guard of the Native Veteran Battalion	406	0	0			
Adding defaulters' room to the above work ..	293	7	8			
Erecting a new quarter guard and defaulters' room at Tanna	1,795	11	11			
Annual repairs to the military buildings, for 1850-51	575	9	0			
Providing additional accommodation for the head quarters wing of the 1st Grenadier Regiment, at Tanna	2,222	0	0			
Renewing the verandah ceilings of the Collector's official residence at Tanna	532	12	0			
Annual repairs to the buildings in the Ecclesiastical Department at Tanna, for 1850-51	174	9	3			
Ditto ditto in the Customs Department at Tanna, for 1850-51	871	15	9			
Putting up boarded weather-frames to the doors and windows of the Church at Tanna..	265	5	8			
Putting up boarded weather-frames in the General Department, at Tanna	97	4	4			
Carried forward..Rs.	30,804	12	1	3,19,611	14	6

Names of Works.	Amount.			Total.		
	Rs.	*a.*	*p.*	*Rs.*	*a.*	*p.*
Brought forward.. Rs.	30,804	12	1	3,19,611	14	6
Putting up boarded weather-frames to the premises occupied by the Collector of Tanna, for 1850-51	41	7	4			
Re-roofing the Custom House at Tanna ..	2,788	8	4			
Annual repairs to the travellers' bungalows in the districts of Bassein, Mahim, and Sungeon, for 1850-51	127	11	4			
Petty repairs, for 1850-51	2,969	9	5			
Erecting pendalls for certain of the police parties stationed in Salsette..	650	0	0			
Constructing a privy with a covered passage to the military hospital at Tanna	322	0	0			
Annual repairs to the travellers' bungalows in Northern Konkan, for 1849-50.	6	9	0			
Ditto ditto in Southern Konkan, for 1850-51	3	7	0			
Ditto ditto in Northern Konkan, for 1850-51	369	4	4			
Repairs to Government bungalow and out-houses at Oorun	608	9	8			
Constructing cook-rooms and platforms at Chowke, and Panwell pendall	850	0	0			
Extra work performed to the staging pendalls at Panwell and Chowke	132	12	4			
Constructing a new travellers' bungalow and out-houses at Nagotna	671	10	2			
Ditto ditto ditto at Mhar ..	702	15	4			
Constructing a new line for the sepoys of Native Veteran Battalion, at Penn.. ..	30	0	0			
Adding bath-rooms and necessaries to the Panwell travellers' bungalow	561	7	5			
Erecting arm-racks and shelves to the staging pendalls at Panwell and Chowke ..	323	3	7			
Petty repairs, &c.	220	2	2			
Total buildings....	.....			42,281	5	10
Grand Total, Company's Rupees Three Lacs, Sixty-one thousand, Eight hundred and Ninety-three, annas Four, and pies Four				3,61,893	4	4

W. D. GRAHAM, Brevet Captain,
Superintendent of Roads and Tanks.

Statement showing the Amount expended by each Officer of the Road and Tank Department, from the 1st May 1850 to the 30th April 1851.

Names of Officers.	Roads and Bridges.	Tanks, Wells, and Bunds.	Buildings.	Total.
	Rs. a. p.	*Rs. a. p.*	*Rs. a. p.*	*Rs. a. p.*
Captain T. A. Cowper	46,695 7 11	182 14 1	10,000 2 4	56,878 8 4
Mr. Sub-Conductor T. P. Armitstead	51,361 11 1	170 7 7	6,721 9 3	58,253 11 11
Lieutenant J. E. Donne	4,382 11 10	.....	.....	4,382 11 10
Captain R. Dennis	22,001 11 5	.....	.....	22,001 11 5
Lieutenant W. Chapman	56,035 15 7	1,563 4 2	6,004 11 10	63,603 15 7
Lieutenant C. Scott	74,095 14 6	5,890 10 3	940 13 5	80,927 6 2
Lieutenant J. S. Trevor	2,601 12 3	.....	699 7 8	3,301 3 11
Mr. Scott	32,372 13 6	248 11 7	13,434 8 4	46,056 1 5
Lieutenant J. A. Fuller	20,011 5 2	1,996 7 7	4,480 1 0	26,487 13 9
	3,09,559 7 8	10,052 7 8	42,281 5 10	3,61,893 4 4

W. D. GRAHAM, Brevet Captain,
Superintendent of Roads and Tanks.

Statement showing the Expenses of Engineering Superintendence, with reference to actual Outlays.

Names of Officers.	Expense of Establishment per Annum.	Expenditure.	Rate per cent.
	Rupees.	*Rupees.*	*Rupees.*
Captain T. A. Cowper	9,393	56,878	16½
Mr. Sub-Conductor T. P. Armitstead	5,409	58,253	9¼
Lieutenant J. E. Donne	1,167	4,382	26½
Lieutenant W. Chapman	10,282	63,603	16
Lieutenant C. Scott	11,882	80,927	14⅝
Lieutenant J. S. Trevor	7,376	3,301	223⅓
Captain R. Dennis	7,675	22,001	34¾
Mr. Scott	10,019	46,056	21¾
Lieutenant J. A. Fuller	8,424	26,487	31¾

Total Expenditure during the year	Rupees	3,61,893
Cost of Establishment do.	,,	71,627
Average rate per cent.....	,,	19¾

NOTE.—Captain Dennis is Postmaster as well as in Charge of the Nagpore dawk line, and the allowances drawn by that Officer should not therefore be all debited to the Road and Tank Department, especially as his Engineering duties are confined to one line of works.

W. D. GRAHAM, Brevet Captain,
Superintendent of Roads and Tanks.

List of Estimates prepared by the Officers of the Road and Tank Department, and submitted for sanction between the 1st May 1850 and the 30th April 1851.

Camp Singhur, 24th May 1852.

Names.	Amount.		
	Rs.	*a.*	*p.*
Superintendent.			
Estimate of the proposed alterations to the Bombay mail road between Khundallah and Wulwund	65,382	0	0
Captain Cowper.			
Estimate for widening the Akoordee road from 20 to 25 feet, and constructing protection-mounds to the embanked approaches of the different bridges along the line	8,938	0	0
Ditto for building bath-rooms, necessaries, and servants' room to Poona travellers' bungalow	928	0	0
Ditto for deepening the quarry near Collector's Office at Poona	1,716	0	0
Ditto for clearing out the aqueduct which conveys water from the Katruz tank	3,364	0	0
Ditto for constructing two single, and two double drains, on the Singhur and Murrah Ghaut road	650	0	0
Ditto ditto four single drains of 25 feet span, on the Nimbadera Ghaut	2,650	0	0
Mr. Armitstead.			
Estimate for constructing a new line of road from Poona, *viâ* the Deweh Ghaut, to Jeejoorie, with a branch to Sassoor	1,57,440	0	0
Ditto for erecting standards at the Kurra river	223	0	0
Ditto for constructing a new line of road between Jamsetjee bund and Waghoolee	35,300	0	0
Ditto for constructing a branch road between Jamsetjee bund and the Cantonment of Poona	4,785	0	0
Ditto ditto ditto and Ghorpurree ..	5,100	0	0
Ditto ditto Military ditto and Kirkee	6,653	0	0
Ditto ditto ditto and Waghoolee, to join Bombay road	5,050	0	0
Ditto for building cross-drains over five dips between St. Mary's Church at Poona, and the Wanowree bridge	1,982	0	0
Ditto for widening the approaches to the Wanowree bridge, and adding stone railing	522	0	0
Carried forward, Rs.	3,00,683	0	0

Names.	Amount.		
	Rs.	*a.*	*p.*
Brought forward, Rs.	3,00,083	0	0
Estimate for providing furniture, visitors' books, and peons' belts, for six travellers' bungalows on the Sholapore road	580	0	0
Ditto for constructing a bridge over a rivulet near Daluj, on the Patus and Indapore road.. ..	25,037	0	0
Captain R. Dennis.			
Estimate for new works, for the purpose of building masonry, wooden, and flying bridges, on the Nagpore dawk line	4,419	0	0
Ditto for clearing a fair-weather road between the Godavery and the Wurda rivers, on the Nagpore dawk line	12,250	0	0
Ditto for new masonry, wooden, and flying bridges on the Nagpore dawk line.	5,925	0	0
Lieutenant Chapman.			
Estimate for making rollers for the road repairs	800	0	0
Ditto for two bridges at nullahs Nos. 20 and 21, on the main road between Nassick and Thull Ghaut..	4,087	0	0
Ditto for sinking a well near the toll house on the Thull Ghaut new road	1,106	0	0
Ditto for erecting a Post Office at Nassick	1,097	0	0
Ditto for constructing a ford with approaches near the site of new flying bridge at Nassick	2,387	0	0
Ditto for building a bridge over the Undwell river ..	16,445	0	0
Ditto for carrying out certain improvements between the Undwell river and Manickhamb, on the great Agra road.	25,956	0	0
Ditto for building a travellers' bungalow at Egutpoorah.	5,320	0	0
Ditto for connecting the old road on either side of the Undwell river	903	0	0
Rough estimate for completing the portion of the Agra road between the Thull Ghaut and Nassick...	3,09,112	0	0
Lieutenant Scott.			
Supplementary estimate for completing the dam across the Kurtoonda river	2,640	0	0
Estimate for the 3rd division of the road between Kussarah and Khurdee	1,73,755	0	0
Ditto for improving the portion of the old road between Kussarah and Khurdee, denominated the portion of the 2nd and 3rd divisions	8,264	0	0
Carried forward, Rs.	9,00,766	0	0

Names.	Amount.		
	Rs.	*a.*	*p.*
Brought forward, Rs.	9,00,766	0	0
Estimate for repairing the portion of the road from termination of 3rd division between Kussarah and Khurdee ..	2,278	0	0
Lieutenant Trevor.			
Rough estimate for improving the portion of the Agra road from Shahpore to Colsette ferry	2,04,033	0	0
Mr. Scott.			
Estimate for increasing the water-ways of the Sankey, Goregaum, and Dhysur bridges	2,826	0	0
Ditto for repairing the horse-boat between Ghorebunder and Bassein.	650	0	0
Ditto for building lines for the several parties of Police employed in the Island of Salsette	1,520	0	0
Ditto for building a raft for the Colsette ferry	1,300	0	0
Ditto for building a horse-boat for the ferry between Ghorebunder and Bassein.	1,499	0	0
Ditto for thoroughly repairing the sluice-gates at Aggassee	111	0	0
Ditto for repairing horse-boat at Colsette ferry	583	0	0
Ditto for building privy with a covered passage to the Military Hospital at Tanna	938	0	0
Ditto for repairing the Cooley bridge at Maloondee, in the Mahal of Bassein	1,622	0	0
Supplementary estimate for repairing the ferry-boat at Dhanoo.	126	0	0
Ditto ditto ditto at Oomergaum ..	145	0	0
Ditto ditto of taking up and relaying the pavement of the ramp at Colsette	2,348	0	0
Ditto ditto of building a necessary for the Custom House at Tanna	278	0	0
Estimate for taking up, and relaying the pavement of the ramp of the Colsette bunder at Tanna .. .	1,621	0	0
Ditto for repairing the raft at Colsette ferry	634	0	0
Lieutenant Fuller.			
Estimate for constructing new lines for the Sepoys of the Native Veteran Battalion on treasure guard at Penn	370	0	0
Ditto for building a travellers' bungalow and out-houses at Mhar	4,498	0	0
Ditto ditto ditto at Nagotna ..	4,393	0	0
Carried forward, Rs.	11,32,539	0	0

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Names.	Amount.		
	Rs.	*a.*	*p.*
Brought forward, Rs.	11,32,539	0	0
Estimate for raising the extra plinth to out-houses at at Nagotna	343	0	0
Supplementary estimate for the construction of bath-rooms and necessaries to the travellers' bungalow at Panwell	91	0	0
Estimate for constructing a new bunder at Nagotna ..	6,266	0	0
Ditto ditto a branch road leading from the main road to the new travellers' bungalow at Nagotna	1,232	0	0
Ditto for repairing the out-houses of the travellers' bungalow at Indapore, on the Mahableshwar road	400	0	0
Ditto for constructing a ramp at the end of the Panwell bunder	897	0	0
Ditto for repairing the out-houses of the travellers' bungalows at Panwell and Chowke	478	0	0
Ditto for constructing a dam with sluices over the creek near the village of Wansee	7,759	0	0
Ditto for putting up the ceilings to the travellers' bungalows at Panwell and Chowke	226	0	0
Ditto for annual repairs to roads and bridges for the year 1851-52	1,36,280	0	0
Ditto for annual repairs to travellers' bungalows, Dhurrumsallas, and buildings in the General, Military, Judicial, Territorial, and Ecclesiastical Departments, for the year 1851-52. ..	6,642	0	0
Grand Total, Company's Rupees....	12,93,153	0	0

W. D. GRAHAM, Brevet Captain,
Superintendent of Roads and Tanks.